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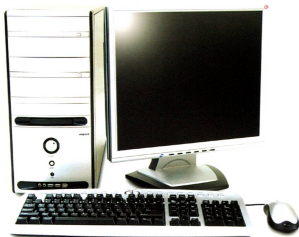
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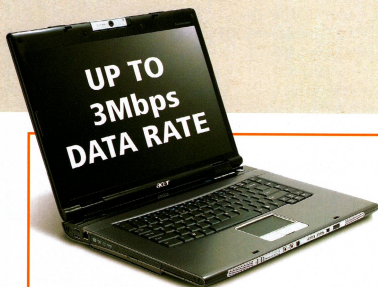
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**[NO ONE
TESTS TECH
LIKE PC AUTHORITY]**

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AUSTRALIAN PC AUTHORITY

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to win a ThinkPad 760T.



FIRST VIIV MEDIA CENTER REVIEWED

Sony VAIO VGX-XL100

p41

BACKUP SUPERGUIDE

NAS and backup software on test

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BUYER'S GUIDE


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products in a range of categories.
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your next PC or component.

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feature 45 categories, from PCs to MP3 players. Turn to page 114.




THIS MONTH



ESSENTIAL FILESHARING

Peer-to-peer downloading goes legit **p46**



CENTRINO DUO

Dual-core notebooks fight it out **p68**

& MUCH MORE...

COVER FEATURE

ESSENTIAL FILESHARING

Peer-to-peer networks have been sullied by piracy, but that's about to change. We look at the history, the court battles, and its future as a legitimate downloading tool. **26**

IN THE LABS

DUAL-CORE NOTEBOOKS

Last month we looked at two notebooks built around Intel's new Centrino Duo dual-core CPUs. This month, we get our hands on a whole lot more. **69**

BACKUP SUPERGUIDE

There are many ways to ensure your data stays safe and sound. We look at two popular ways for the home and office. This mega-roundup features looks at which NAS hardware and backup software keeps you safe. **76**

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PC AUTHORITY

THIS MONTH'S TOP GEAR

► The Acer came up on top in our first Centrino Duo notebook roundup. Find out why on page 68.



► Creative shows us there's little need to buy an iPod, or get locked into iTunes. Check out the new Zen on page 50.

[NO ONE TESTS TECH LIKE PC AUTHORITY]



► We finally got our hands on the world's first Viiv PCs. Find out if it's all hype on page 41.

Straw poll
Pirate cove or big business:
what's the future of filesharing?
feedback@pcauthority.com.au

Login



Ten years ago I downloaded a then unknown application that sounded too good to be true. I couldn't believe that by installing a piece of software I would know when another person was online and send messages to them. That piece of software was ICQ, and it started a revolution in instant messaging that we now take for granted.

But once we got over sending messages to each other in real time, I skimmed through the other features that this nifty little app provided and found that we could send files back and forth. No email, no FTP, just a press of a button and you can send a file directly – exactly what we needed. While Napster made the headlines, it was applications like ICQ that laid the foundation for modern peer-to-peer (P2P) networking by simply providing a way for people to connect directly to each other.

Ten years later and peer-to-peer is hot property, whichever way you look at it. It's a haven for pirates, but it's also becoming a valuable tool for small groups, independent publishers, and big business. The rampant copyright infringement saw P2P get some court side action, but the growing legitimacy of filesharing ensures it'll have a permanent role in all forms of media distribution. Films, TV, and music will all be tapping into these networks – there's simply no faster or cheaper way to reach a large audience than a P2P network.

In researching this month's feature, I was floored by how pervasive all forms of filesharing is getting. From my father sharing his photo library with our distant relatives, to Warner Bros looking to release films via P2P networks in Germany, you won't need to look too hard to find and share files. It's a fact that the majority of files being traded around the world are copyright, and only the naively optimistic would assume that it'll disappear when big business jumps on board. I don't see that as happening. Rather, the proportions will balance out – piracy will always be there, but so too will legitimate content increase. It's a big call, but a logical one. Check out the feature on page 26 and make up your own mind.

David Kidd, Editor
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PC AUTHORITY

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haymarket

Techdesk

Latest news, trends and products in the world of technology.

FAQ

Email postage fees

Email is free, everyone knows that. Not any more. Yahoo! and AOL want to charge companies one US cent for every email sent.

Why on earth would anyone pay that? They can just use another service and get it for free like everyone else. Ah, but that's the cunning bit. For that one cent fee, AOL and Yahoo! are guaranteeing the mail will get past their spam filters and make it to its destination intact.

That's quite handy for them, but what's the point of a spam filter if it's not going to protect you from spam? None really, but it allows Yahoo! and AOL to guarantee that mass mailouts from companies won't happen, at least not without paying the toll.

If a company's sending out 5 million emails at a time, that's quite a lot of money for AOL and Yahoo!, isn't it?

Yes, it is, but there are laws against that sort of thing. The company still needs to prove the email isn't illegal spam.

So will they start charging normal users too?

It's possible, but not yet, although Bill Gates has proposed it in the past.

Can I do anything to stop it?

Quite easily - just stop using Yahoo or AOL for your email. If there's no-one for companies to send their email to, Yahoo! and AOL might think a bit longer before coming up with schemes like this.

TECH TAKING OVER

Most of the best known brands in the world are computer-related... and none is Microsoft.

You would think you could probably name the most high-profile companies in the world pretty easily, wouldn't you? Ford, Microsoft and IBM would at least be in the top 10, you might think.

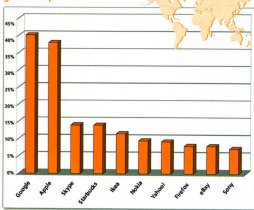
Apparently not, according to the latest annual global survey by www.brandchannel.com. Just a couple of years ago, the most influential and known brands were dominated by the likes of Coca-Cola, Mini, Nike, BMW - even Arab news channel Al-Jazeera made it onto the list last year.

But now the tide has turned and it's all about tech. Google and Apple romped away in the first two slots, but new entry Skype leaped from nowhere into third position, an amazing achievement and a reflection of the impact VoIP has had over the past 12 months.

The only two non-tech-related firms to make it into the global top 10 this year are coffee and furniture icons, Starbucks and Ikea.

Meanwhile, Nokia, Yahoo, Firefox, eBay and Sony fill out the final slots. In terms of brand awareness, Microsoft and IBM don't even figure. But although the list of tech companies who do feature is diverse, all have one thing in common: they are intrinsically interactive with their customers whether it be via searching for info, listening to your MP3s, emailing,

readers' choice
2005
global top votes



personalising your web-browsing, selling and buying by auction, or making phone calls. Five of them are online-only, and Firefox isn't even a traditional company - just volunteers producing open source software.

The question now is whether this heralds a new age of tech-boom, or the peak before an inevitable bust? As we report, some of these firms have just turned in poor profits.

MS may rue its lack of brand awareness and may have been wrong-footed by specialists in fields where it dips its toes, but the company won't remain under the radar for long.

WINDOWS VISTA WOES

Upgrades, exclusives and legals

Last year's big game release Halo 2 - which runs on the old legacy Xbox - won't make its appearance on PCs until next year. The reason for the delay is simple: MS will only let it play on its new Vista OS 'to show it off at its best'. It's also a very handy way to ensure gamers will upgrade to the



into court over some of the defaults on Vista which prevent companies like HP and Google from customising boot screens and search engine choices.

new OS. Meanwhile MS is headed back

BROADBANDING TOGETHER

Companies form anti-Telstra cartel

After months of uncertainty over Telstra's intentions, rival Australian ISPs will release this month their plans to hit back at the telco giant. Telstra has been actively trying to shut out other companies from using its ADSL2 network when it launches. Now its rivals have banded together

to put together their own next-gen network instead. It is believed Optus will be putting in its own exchanges and lines to homes in major population areas and giving access to ISPs with existing customers in target areas in July. Prices should undercut Telstra, and will offer line-rental-free packages.

'An e-mail charge will destroy the spirit of the Internet. E-mail should be free and accessible to all. This will disenfranchise people.'

Richard Cox of Spamhaus defends the right to FW: FW: LOL!!!!!! We're just trying to work out where we'll stick the stamp.

INTERNET BOOM BUST AGAIN?

Profit decrease among online giants prompts new doubts.

The long established reign of Amazon as king of online selling is under threat, and with it, the future of all online sales.

Stock market analysts are re-assessing their view of the whole online market after profits slipped for four of the Internet giants, including Google, in recent months.

Amazon came up short on its Christmas sales despite turnover of almost \$4 billion in the last three months of the year. But despite those figures, it only turned a profit of around \$300 million, close to half of the previous year.

Over the whole year, Amazon sales went up by a quarter, but its profits slipped by a third.

Over at Google, the company revealed profits had doubled in the past 12 months, but the figures were seen as poor compared to stock market expectations. Share earnings fell a long way short of predictions and the value of the company slumped overnight by a whopping \$11 billion. Now analysts fear the boom which sent Google shares soaring to make the



company worth more than many countries, could now be over.

More importantly, they have identified online companies not returning the economies of online sales as against bricks and mortar shops in terms of profits. The most common cause of that is because consumers expect cut-price deals online, wiping out the savings made by not having a physical presence.

As a result, the new furore could either foretell another Nasdaq-style crash when investors take their money and run. Or possibly worse still for consumers: higher prices online as companies strive to increase their profit margin to satisfy shareholders.

HEAD TO HEAD: Home networks

We've come a long way since we first started going online. ADSL, VoIP and Wi-Fi are now routine in many homes. How best to do it all? This month, we pit a legacy stack against an all-in-one solution.



VoIP, Wi-Fi, ADSL stack



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PRICE?

About \$400

\$299

WHY WOULD YOU?

Over the years you will have gathered equipment as you needed it. A Wi-Fi router here, an ADSL modem there and maybe recently a hardware VoIP ATA. If it's not broke, why replace it?

DHCP. Everything wants to be a router now, so you end up with all sorts of conflicts and have to run the modem in bridge mode hidden behind the Wi-Fi. Then there's the heat, ugliness, plug points, cabling...

If your system falls over at any time, resetting can be a nightmare. But if you want to upgrade a single component rather than the whole lot, this is a good bet.

WHY WOULDN'T YOU?

SO SHOULD YOU?

One nice and neat package that handles everything you need, taking up a fraction of the desk real estate, and all functions accessed through a single options screen and it's ADSL2/+ ready too.

Already got the gear and managed to get it working? You might not want/need to switch. You won't get your money back on your gear. It's also only 56Mbps which may be slower than your current Wi-Fi router.

Yes, quite simply. Easier set-up and easier maintenance count for a lot, even at this price. It works almost flawlessly. Its only failing is that it's not 108Mbps.

'Why is it that we are not seeing efficiency if, in fact, the model is more efficient?'

Prudential analyst Mark Rowen wonders why Amazon isn't seeing glorious profits of recent years.

Linux dreaming

■ Linux users are turning their backs on just using it as a server OS and now want it more and more for multimedia and desktop apps. A recent poll by Novell on the most wanted Linux variants of Windows/Mac applications was topped by Photoshop, with iTunes not far behind in fourth place. Other apps were Autocad, Dreamweaver, Macromedia Studio, Flash, Quicken, Visio, Quickbooks and Lotus Notes.

Napster still alive

■ Despite apparently being put out of business by the courts and then being reborn as a subscription service everyone said was doomed, Napster now has more than half a million paying customers. It's still in the red though, but almost all of its \$50 million loss was spent on marketing.

Monitor magic

■ Viewsonic has announced it has hit the Holy Grail of monitor speed with a new 1ms response time technology due to hit stores later this year. More baffling though, is the enigmatic announcement that the new monitors will also include an OverDrive chip that 'speeds up' PCs.

Yahoo rewards

■ Yahoo! has launched a poll among its mail users to find out how best to entice them into using its search engine over competitors like Google. Ideas so far include free music downloads, frequent flyer points or unlimited mail storage. Would Google follow suit if the idea takes off? It's certainly a better idea than charging a subscription.

YAHOO!

Wireless slowdown

■ Australian wireless ISPs Unwired and iBurst have both admitted they deprioritise peer to peer downloads like BitTorrents. They claim the move frees up bandwidth for VoIP, email and Web traffic.

P2P strikes back

■ BitTorrent is going to court to stamp out pesky imitators using its name to spread malicious software. The trademark



holders are demanding royalty and licensing approval from anyone wanting to use the BitTorrent name in a bid to shut out the nasties. BitTorrent will remain open source though.

Legal update

■ Microsoft Office users are being ordered to update their software after Microsoft lost a legal battle over its Access program. MS lost a legal action that claimed Guatemalan, Carlos

Amado, had invented a link between Excel and Access which was then used by MS. Now users must update their software to eradicate the offending code.

Hacker la vista, baby

■ A Spanish hacker who launched a denial of service attack that crippled the net for three million users has been jailed for two years and fined \$1.5 million. Santiago Garrido, 26, launched the attack after he was kicked and banned from an IRC channel in 2003.

No free ride

■ Hopes that Microsoft would bundle its new anti-virus software for free with the OS seem to have vanished. US reports claim MS will start charging US\$50 a year for the Windows OneCare Live service, with a special US\$20 introductory offer. The move might please rival AV companies threatening anti-trust lawsuits but will disappoint users who may feel the OS should be inherently resistant to virus attacks.

Dell's toolbar toll

■ PC giant Dell is set to reap \$2 every time it sells a PC with Google's toolbar installed and the user makes his first search. The search engine outbid MS for the rights to have their software pre-installed in a move which could cost Google up to \$1 billion.

Most Wanted**CORD CONVERGENCE**

There's an elegance here we really like. It's A4's keyboard and VoIP phone handset in one. In convergence terms that's like pizza-flavoured Pepsi Max. We are willing to guarantee the handset and mouse cords will get tangled within seconds of you installing it. Still, it looks nice.

<http://tinyurl.com/d9mxr>

HOTLINE HANDSETS

Sony Ericsson's K750i is one of the slickest handsets on the market right now with its superb 2.0MP camera. But it's about to be overtaken by these newbies from SE. The W810 replaces the flawed colour scheme of the W800i and the new W900i is a swifely 3G version.

<http://tinyurl.com/68sbf>

LOONY LAPTOP

This is the perfect accessory for those with golden hovercrafts and platinum-plated helicopters. This diamond-encrusted laptop costs \$500,000 and looks like a toilet seat. We can't think of a better way to spend our immense lotto winnings from last week's Powerball draw.

<http://tinyurl.com/9emwq>

3D DOME DOOM III

Quite frankly, we don't care if it works, we just want to sit in front of it and look cool. It's a 3D 180° virtual environment created by a fancy mirror/projector set-up for military flight simulators. This is the baby 1.65m version - its big brother is a whopping 5m wide. It's not actually that new, but it's still ace.

<http://tinyurl.com/8opwe>

DINOROBOSAURUS

Just when you thought it was safe to go back to the toy shop, the makers of the annoying little furry bundle have come up with this, Plo the cutesy robotic dinosaur. He's a 'one-week old camarasaurus' and you'll probably want to beat it to death.

<http://tinyurl.com/7cex6>

HOT...**De-spam your email**

jumba.com.au is currently offering free mail forwarding (and website forwarding also) if you have your own domain name. To really stamp on spam, forward your domain name email to your Gmail account via jumba and let it filter out any spam. Next, tell Gmail to keep a copy but forward the email again to your ISP email address (set it up as something really cryptic to stop the spambots - you won't hand out that email address anyway). Now you can archive and access all your spam-free email from anywhere in the world via Gmail, and just keep current emails in Outlook. See <http://www.jumba.com.au/hosting/free.hosting.php>.

Foxtel iQ

When Foxtel first launched its digital video recorder, it laughably tried to charge \$395 just to borrow the machine and another \$5.95 a month to use it. But Foxtel has now quietly axed the \$395 fee and you can now get it for just \$10 a month if you subscribe to all channels. It's still no bargain, but once you get one, you'll wonder how you ever lived without it. It's like all the excitement you ever had over your first video recorder, only many times better.

Google

As Tim Dean discusses in Technolog, Google has launched its censored China site amid predictable controversy. But it also recently delisted BMW's German site for skewing search engine results. While that's actually quite commendable, Google has shown a remarkable lack of consistency. There are many individuals who have complained their Google 'profile' shows up outdated or false information, often deliberately skewed by malicious enemies. Yet Google refuses to act on these cases. Google could, but Google doesn't.

...NOT

'We're sensitive to people calling their software BitTorrent in order to distribute spyware and adware.'

BitTorrent's Ashwin Navin can barely be heard over the laughter from record company bosses and movie tycoons.

Apple and Intel finally unite

The new dual core machines are ahead of their time.

It's quite amazing how well one of the biggest product releases of the year managed to remain so hush hush, but Apple surprised more than a few techies with its sooner than expected launch of Intel-powered systems.

Many were expecting this union to take place much later in the year, so the new iMac with Intel's Core Duo processor came as a surprise to most.

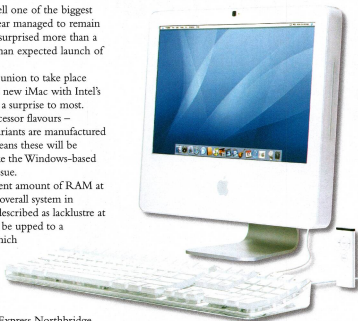
Available in two main processor flavours – 1.83GHz or 2GHz – both variants are manufactured on a 65nm process, which means these will be running cool and fast, just like the Windows-based notebooks reviewed in this issue.

The two cores share a decent amount of RAM at 2MB across the two, but the overall system in the base model can only be described as lacklustre at 512MB. Fortunately, this can be upped to a much more friendly 2GB, which will soon become the benchmark for desktops.

The backbone of the system is a 667MHz frontside bus, and it appears Intel's Mobile Intel 945GM Express Northbridge has been adapted for use within this iMac, along with an Intel ICH7-M Southbridge.

No sooner had this machine been announced than an enterprising Mac fan offered up a US\$6000 prize for the first tweeker to enable dual booting of

Windows XP and OS X on the one machine. So far, the prize is up for grabs, but we're confident it won't be long before we'll see an iMac running Windows XP. And then crashing.



Topless hard drives exposed

Western Digital is the latest manufacturer to woo the modding crowd. As we revealed in our CES report last month, the company has announced a range of hard drives that will have clear tops and allow the user to see the shiny platters spinning at dizzying speeds within as the head actuator moves back and forth.

The WD Raptor X will be the perfect drive for cases with perspex windows (as seen above), and unlike the homebrew concoctions, there's no risk of dust contamination. It's no slouch either, building on Western Digital's phenomenal Raptor performance, with a 10,000rpm spindle speed and a whopping 16MB cache helping to deliver an average latency speed of 2.99ms. Speedy, and oh so sexy, if you're into that kind of thing.

45nm within Intel's grasp

Just as we're coming to grips with the minuscule 65 nanometre process, Intel has made these look massive with its successful demonstration of its 45nm process. It is the first company in the world to build a fully functional SRAM chip based on the process, which is an important step in the process of developing fully fledged processors on a 45nm fabrication process. The chip contained over one billion transistors.

According to Intel, 45nm chips will have up to five times less leakage than today's chips, which should equal lower power consumption and fewer heat issues.

Bye-bye barcodes, hello trackable RFID tags

The days of the barcode could be numbered with the advent of thinner RFID (Radio Frequency Identification) tags. They've already stirred up their fair share of Big Brother conspiracy theories, and there's even more to come from the tiny trackers.

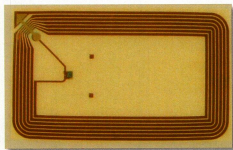
While RFID tags are already in widespread use, recent advances in RFID manufacturing from both Hitachi and Philips could make them the dominant form of identification across a wide range of uses.

Hitachi presented its 0.15mm by 0.15mm, 7.5 micron thick RFID integrated circuit at the IEEE International Solid-State Circuits Conference in San Francisco.

Using SOI (Silicon On Insulator) technology, the integrated circuit has been developed to be simple to integrate into paper packaging, with potential use as an 'intelligent watermark'.

Philips countered this announcement with its own unveiling of an RFID based solely on plastic electronics, with the chip able to be printed directly on to a plastic substrate, unlike today's silicon-based RFID integrated circuits.

The Philips RFID IC is fully compatible with the 13.56MHz transmission frequency, which currently dominates the RFID industry, while it appears the Hitachi IC uses a different frequency.



'Apple is aware of [corrupt video-display on the new Intel iMacs] and is looking into it.'

Coinciding with the move to Intel, Apple is having issues. Microsoft must be chuckling all the way from Redmond.

Opera hits back

■ Opera is hitting back with its latest v9.0 release. Although still not as flexible as Firefox's extensions, 'the other' browser now has some of the functionality of Firefox's most popular plug-ins built into the browser code, such as improved pop-up blocking and web page customisation. Also included is a fully fledged BitTorrent client which will earn it kudos with the P2P crowd. Most interesting though is the inclusion of widgets to add extra functions, like calculators, to the desktop.

iTunes billion looms

■ Apple is preparing to celebrate its billionth music sale on iTunes with giveaways for every 100,000th customer in the lead up. For the last 50 million sales to the landmark number, 500 winners will receive a \$100 iTunes gift voucher and a 4GB iPod Nano. The billionth customer will receive a 20-in iMac, 10 60GB iPods, and a \$10,000 iTunes voucher.

Google worries

■ Google has launched a new version of its desktop sidebar, offering desktop widget panels and the ability to share indexed documents over the Internet. However, the documents have to be uploaded to Google's own servers, provoking new privacy fears and even possible legal implications.

It's just not cricket

■ A switch to 2.5GHz for wireless Internet could jeopardise Australian sports coverage, TV companies have claimed. The Australian Communications and Media Authority has proposed the bandwave switch, but TV chiefs claim it would knock out their outside broadcast units which already use the frequency for news and sports events.

Get in touch

■ Send details of news, new products or technologies to techdesk@pcauthority.com.au.



Migrating skills

Philip Argy wants to see ICT jobs staying in Australia, not slipping away overseas.

PC Authority readers who worked in ICT back in the mid-late 1990s will remember it as a time of high growth, unlimited opportunities and high salaries.

However, with the dotcom crash and subsequent global downturn in the ICT sector, the skills shortage disappeared.

Even though many suggested that the 'boom' days of the 1990s would never be repeated, industry analysts are once again predicting a new cycle of strong growth with shortages across a range of skills.

Factors expected to fuel the shortages include the retirement of thousands of baby boomers and lower graduate numbers. And this is happening at a time when ICT has become ubiquitous, driving increased demand for ICT products and services across all areas of industry, commerce, government,



to choose an ICT career. Not only does this approach limit their career options, but it also hinders Australia's ability to fully leverage the enormous potential ICT represents to deliver productivity gains and competitive advantage across a range of sectors.

The world watched as India identified the ICT opportunity and

'India identified the ICT opportunity and then completely reinvented itself to take full advantage.'

health, education and community life. Recent news out of the United States suggests demand is already outstripping supply in key areas, with technology-related roles accounting for five of the top 10 fastest-growing jobs in terms of both demand and salary.

While this is good news for ICT professionals, it raises challenges for the whole industry. How do we meet the growing need for ICT skills and knowledge? The only feasible solution is to ensure we have a large enough pool of skilled ICT professionals to meet the need, and that means training our own people.

While we have seen an encouraging trend this year with stronger demand for blended ICT/business courses at Australian universities, the majority of parents still don't encourage their children

then completely reinvented itself to take full advantage.

While it is unrealistic to expect that Australia could emulate India's example, there is much we can learn from its approach.

Education is the key, and our universities are still considered amongst the best in the world in terms of training ICT professionals. It's time for ICT professionals to speak up to counter the negative media stereotypes and cynical parents who think ICT is all about repairing personal computers or sitting in a dark room writing code.

This is the industry of opportunity, so let's get the word out. The next decade offers enormous potential for people who choose ICT as their profession, both in terms of employment prospects and financial rewards.

Working on IT

How can we encourage more Australians to study ICT?

The ACS Foundation (www.acsfoundation.com.au) is working to attract the best students into ICT with scholarships that not only alleviate the financial burden of studying, but also open doors to employment opportunities.

The Foundation's Work Integrated Learning Program (WIL) matches students with companies for 12 months practical experience that gives them insight into how businesses operate.

Companies see value in this approach because it ensures that students gain industry experience while allowing them to determine whether they are a cultural match.

We also need those working within the ICT sector - people like you - to start talking about the benefits of ICT as a career.



Philip Argy is National President of the Australian Computer Society. See www.acs.org.au.



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Don't be evil, Google?

To what extent should our political beliefs influence our business decisions?

Tim Dean wrestles with the ethics of Internet censorship overseas.

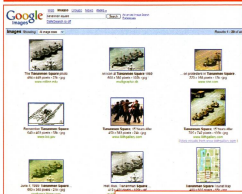
And I quote: 'Corporations which provide Internet searching, chat, publishing or other services should make an effort to ensure that they respect the rights of their clients to use the Internet without interference.'

This quote comes from a joint declaration between the United Nations, the Organization of American States and the Organization for Security and Co-operation in Europe and was signed only in December last year.

Yet I wonder whether that was too late for Google to give it a good read and ponder its significance?

The launch of Google's official portal for mainland China, **google.cn**, has received a lot of attention recently. Not surprisingly, in order to earn the Chinese government's stamp of approval, Google had to employ some fairly striking censorship to its results. Sites covering the Tiananmen Square protests of 1989, the Dalai Lama, the Falun Gong and many European and American news sites just don't rank when you search

SPOT THE DIFFERENCE



▲ Above is a normal Google image search for Tiananmen Square.

will or that it should. Hence, Google's own motto: 'Don't be evil'. From the outset, Google branded itself as a company that did things because



◀ And the same search on Google China. But, if you mis-spell, you at least get a hint of the massacre (left).

of the day, Google is not really to blame. Instead we need to evaluate the way we do business, and weigh up the relative importance of economic prosperity compared to our moral convictions.

Many investment funds and shareholders have been doing just this, such as what happened on December 22 last year. In association with the Reporters Sans Frontières, 28 investment groups, representing over US\$22 billion in assets, issued a joint statement supporting the freedom of expression on the Internet.

Sure, US\$22 billion is only a drop in the ocean, but it's by no means insignificant. So if your moral convictions are strong enough to tip the balance against financial concerns, then there is a recourse.

Don't invest with Google. Invest with an ethical fund that supports your convictions, and make a statement with your wallet.



'Google had to employ some fairly striking censorship to its results...but if Google hadn't, someone else would.'

using **google.cn**.

This is clearly censorship that we would not tolerate if it were to take place in Australia. However, should we tolerate it if it's happening in a foreign country? This is not an easy question to answer.

Google is quite within its rights as a company to conduct its business in any way it pleases as long as it doesn't contravene any local or international laws. In fact, Google couldn't operate in China if it didn't respect the local laws. This raises the question of whether Google should do business in China at all.

Just because a business can do something legally doesn't mean it

it thought they were the right thing to do, not necessarily because they would lead to increased profits at any cost. This is not to say that Google has always adhered to this ideology, but it has left it wide open to be branded hypocritical when it appears to contravene it.

But it's not even as easy as criticising Google for breaching its own moral code. In Google's defence, there is a compelling business imperative that drove it to comply with China's restrictive censorship laws. The old drug dealer argument raises its head: if Google didn't go in there, some other search company would have done so. This doesn't make it 'right'

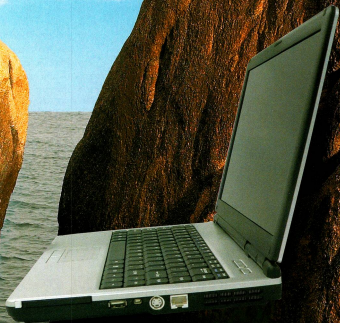
in the moral sense, but economic Darwinism says that only the most competitive business survive. Had Google not taken the opportunity, it would have weakened its business. It also would have been negligent in its responsibilities towards its shareholders, who expect a return from their investment.

Through all these arguments, I can see why people would not want Google to comply with a censorship regime that they themselves wouldn't tolerate having applied to them.

But I can also see why Google would have taken the opportunity to get into the incredibly lucrative market in China. At the end

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Television 2.0

Television will change more in the next five years than it has in the last five decades. **Tim Dean** looks at the future of TV.

There's been no shortage of talk about how digital TV will change television as we know it forever. Certainly, going digital marks the end of the half-century hegemony of analogue television. But there's more to digital than simply changing the way TV shows are delivered. Digital free to air broadcasts represent only the first step in a far broader revolution that is taking place in our living rooms. Interactivity, electronic programme guides, personal video recorders, downloadable content and even IPTV will eventually transform television into a very different beast. Sometimes it's hard to get a full grasp on the implications of these technologies on television, so it might help to take a step back and look at the bigger picture.

TV 1.0: analogue television

Think of the old analogue broadcast system as TV 1.0. Under this system, television was pushed out in an analogue format in serial form, so stations only broadcast one show at a time. If you wanted to choose from more than one programme at a time, there needed to be more stations, each broadcasting content at the same time. Under TV 1.0, we also had to resort to paper programme guides to know what was on at any one time. Of course, this all made TV 1.0 very inflexible, if predictable. Most importantly, if you wanted to watch a TV 1.0 show, you had to make yourself available at the time the television stations decided. And heaven forbid there be two shows you want to watch at the same time.

TV 1.5: digital television

The next step didn't take place until the late 1990s with the introduction of digital television – TV 1.5. You might have expected digital television to be TV 2.0, but the reason it doesn't get a bigger version jump is because for the most part it delivers the same experience as TV 1.1. Sure, the picture is clearer, widescreen is introduced, reception is better and there's even high definition for those who can afford it, but content is still pushed to us by the broadcasters at the times of their choosing. Furthermore, we're still confined to paper programme guides and our VCR (assuming our digital set top box has an analogue output).



Photograph: Getty Images

'The discreet 30 second ad break is like a late Cretaceous dinosaur and the PVR is like a giant comet.'

TV 1.1: enter the VCR

The first major evolution of the original TV 1.0 came in the 1980s with the introduction of VCRs – the TV 1.1. Although still being broadcast in analogue serial form (albeit now in colour and stereo), recording television shows on the VCR for later viewing was already possible. This meant we were unlocked from having to watch a show at the time the television station chose, at least to some extent. TV 1.1 was not without its problems though. We were still reliant on paper programme guides, and had to manually set our VCR – a task prone to error and a cause of much frustration. VCRs also had a relatively limited recording time, usually only three or four hours. Video was also poor quality, and the tapes themselves were linear, making it difficult to jump to the content you want to watch or to skip ads. Still, the VCR began a shift in our TV viewing habits.

TV 1.6 & 1.7: personal video recorders

More significant to our viewing habits than digital television alone is the personal video recorder (PVR) – TV 1.6. Even with the clumsiness of a paper programme guide and manually setting record times, a PVR's effectively unlimited recording capacity (unlimited in the sense that it's practically hard to record more than you will actually watch in a week) means we can further detach ourselves from the broadcaster's viewing schedule. TV is kicked up to 1.7 by having multiple TV tuners in your PVR, giving even more flexibility by being able to view one live broadcast while recording another. With enough tuners you'll never miss a show.

TV 2.0: electronic programme guide

Even more significant to our viewing habits than

digital television is an electronic programme guide (EPG). By this I don't mean a mere digital channel that shows what's playing later in the day. A proper EPG needs to be interactive. It doesn't necessarily need to have an upstream channel back to the station, it only needs to be interactive with your PVR.

When you combine a PVR with an interactive EPG, you truly begin to unlock television from the whims of the broadcaster. Instead of being locked into watching shows when they are broadcast, or even specifying that a particular programme should be recorded at a certain time, you can begin to search for content by other means. Meta data that accompanies each entry in the EPG can allow you to simply specify that you want to record the news each night, all documentaries, every episode of the Simpsons, anything with 'trek' in the title, and any action movies. The PVR will do the rest for you.

The technology that makes TV 2.0 is already here today. We only need digital television, personal video recorders with multiple tuners and generous based around MHP (Multimedia Home Protocol). Sadly, we're still a long way off from

seeing TV 2.0 in Australia. The problem is that TV 2.0 represents a challenge for the broadcasters. It might be terrific for us viewers to be unshackled from the broadcasters' timetable and to skip all the ads from our PVR, but it causes havoc with the broadcasters' primary source of income: advertising. The discreet 30 second ad break is like a late Cretaceous dinosaur and the PVR is like a giant comet.

This doesn't mean advertising can't evolve to adapt to TV 2.0 viewing habits. In fact, it's expected that TV advertising will eventually become more like advertising online today. The old technique of spamming your 30 second ad hundreds of times in demographically appropriate time slots will give way to a more Google-like approach. However, to do this, we need to get to the next phase of TV.

TV 2.5: interactivity

MHP doesn't just enable an EPG to interact with

all ads any more. We're sure to see more product placement in shows, but sadly it's probably going to be those annoying banner and overlayed ads that will increase in popularity. They're already taking off in the US. Still, it will mean that television will stay free for us, and we'll get the advantage of interactivity, an EPG and our PVRs.

TV 3.0: IPTV

While we're on the subject, it's probably worth mentioning the more distant future of television – TV 3.0. This major evolutionary step will occur when we start seeing IPTV services roll out. It makes perfect sense to send video over the Internet, assuming enough people have high speed connections. Combined with subscription and pay-per-view services, we can pick and choose from just about any content from around the world, and pay for, download and watch it on our own terms. There are already trials of IPTV going on around the world, and some video stores in the

'Ads themselves will also have to evolve, as the discrete 30 second slot will not be the best format for all ads any more.'

your PVR, it can enable you to interact with the television station itself. To do this you require an upstream channel, which would probably be provided by ADSL or another high-speed Internet connection. This type of interactivity is more than just metadata being broadcast along with the show, such as when you see the song name when listening to a digital radio station. TV 2.5 is about full interactivity. This opens up new types of programming, such as interactive quiz shows, real time voting, or even the possibility of viewers choosing from a number of alternate plot courses in a show.

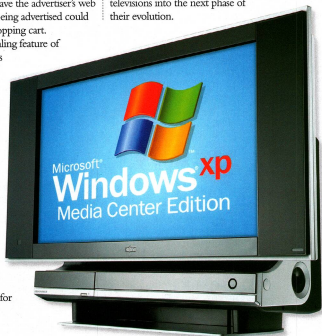
Interactivity also offers a couple of attractive new prospects to advertisers such as interactive ads. A user could hit the interactive button on their remote, and automatically have the advertiser's web page open, or the product being advertised could be added to the viewer's shopping cart.

However, the most appealing feature of interactivity for advertisers is information. Given that interactivity is a two way street, the broadcasters are able to gather very valuable information about you and your viewing habits – all anonymous, of course. This information is gold dust to advertisers, who can then target their ads with the precision of a laser guided bomb, or Google's AdSense.

Ads themselves will also have to evolve, as the discrete 30 second slot will not be the best format for

US are already thinking of moving online to save their flagging DVD rental revenues. How TV 3.0 will unfold is still uncertain at this stage, although it will probably end up being a complement to TV 2.5 rather than its replacement. Even with the capability to download and watch any of a thousand different shows, there's nothing that will replace television stations with things like exclusive content, news, sports and other live events.

So digital TV, while being a significant milestone for television, is not actually the most important development of the past few years. All we need now is some enlightened thinking on behalf of our television broadcasters, some resolve from our government and an interactive electronic programme guide, and we can kick our televisions into the next phase of their evolution.



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The Investigator

Sometimes the Investigator does not have to speak to anyone to get things done. The mere fact that he is on the trail can be enough to get results.

PC Authority reader Andrew Dunn bought a Wi-Fi SDIO card from the Acer website for \$99 back in July 2005. His credit card was debited immediately. The card shipped a week later but, Andrew says, 'for some unknown and bizarre marketing reason the card was not shipped to me but to a third party dealer from whom I had to collect it.'

Eventually he received the card, opened the package, inspected the card and installed it. Everything worked except the onboard security was limited to WEP. The problem was that both of Andrew's personal Wi-Fi networks only utilised and allowed a minimum of the stronger WPA security.

'The card was therefore no good to me,' he said. So Andrew contacted Acer tech support and confirmed the card was only WEP capable and Acer had no immediate plans for a WPA capable card.

He contacted Acer sales support on 25 July 2005, nine days after the order was placed and two days after collection (as opposed to delivery). However, it took two more phone calls and several more

was finally collected for return to Acer by their courier on September 27.'

Andrew received confirmation that Acer had the card back and waited patiently for the refund of the purchase price to appear on his credit card statement. It didn't happen. As the months ticked by Andrew checked his credit card and each month the answer was the same; Acer already had the card but there was still no refund.

Finally, in the new year Andrew wrote to PC Authority: 'Of course, I will always

'Andrew checked his credit card and each month the answer was the same, Acer already had the card but there was still no refund.'

days before he received an authorisation to return the card.

'Acer was to send a courier to collect the card – my offer to return it at my own expense was very politely rebuffed and I thought "what magnificent customer service." Needless to say, I was wrong – very wrong. Following a series of eight telephone calls – and numerous rebuffed offers to simply courier it myself – the card

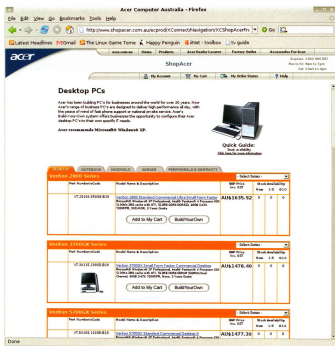
be out of pocket because even if I ever do get my money back, I have probably spent more than the \$99 in telephone calls – and let's not take into account the value of the time involved!

'This order might only be worth \$99 but how much is this simply shoddy behaviour worth to Acer if there are more customers like me out there – out of pocket,' he said.

The Investigator went to Acer, but unfortunately nobody was available to comment at the time. We were told that someone would get back to us. We were just about to contact Acer again after not hearing from them for a while when another email arrived from Andrew.

'I was pleasantly surprised to receive a call from Steve Robb at Acer only a few days after my email to the Investigator. Of course, the Investigator wasn't mentioned in the call – I hope that I wasn't expected to believe that this was just an Acer initiated follow-up.

'Admittedly, I was a little skeptical when advised that my refund would go through straight away, but on checking my credit



card account, lo and behold, there is a credit from Acer for \$99. I can only put Acer's sudden desire to provide my refund down to my communication with the Investigator – so thank you for your intervention.'

If only it were always this easy. Keep those emails coming in, and we'll get right on the case.

HERE TO HELP

We welcome consumer complaints and questions, and we'll do our best to help find a solution for all parties involved. If you're the victim of poor sales, dodgy service or any other kind of dispute, we need to hear about it. If you'd like our help, email us at: investigator@pcauthority.com.au.

Please note that the companies or individuals mentioned here are meant to illustrate the typical problems that an ordinary consumer could face. If a company is mentioned here it should not be taken as an indication that incidents described are typical of that particular company.

Please don't use the PC Authority or The Investigator names as leverage to get more than you are entitled to.

Wireless security

Gone are the days when WEP was the only encryption standard around. It's now widely regarded as a poor security standard on its own, and we'd recommend upgrading your wireless gear to support the superior WPA standard. When buying wireless kit, always remember that all component must support the same protocol, not just the router, and always cut through the marketing hype to find out whether it supports WPA.



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A desktop computer setup featuring a monitor displaying a man in a racing suit celebrating with a trophy. In front of the monitor are a racing steering wheel, a gear shifter, and a game controller. A tower unit is visible to the right of the monitor.

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Inbox

Got something to say? If you have a good story, an amusing anecdote or a tale of woe, we want to hear it!

HAPPY 100TH

Sydney Harbour Convention Centre Computer Show 97/98 - that's where I first met the guys from PC Authority (and a lovely girl!) and bought my first ever computer magazines, with

'Why do security companies not change the bad features of the last version and make them better in the new one?'

issues one and two going for a \$5 special. The magazines were selling like hot cakes.

I have purchased every issue since then (I'm now a subscriber), and have kept the cover CDs (the one with Outlook 98 has come in handy many times). The magazine has seen many changes (both in paper and the website), and has always been a great source of information, with plenty of running commentary from the readers. I have looked at other

magazines for objectivity, but PC Authority is still number one on my list. Congratulations on your 100th issue and for doing a fantastic job.

C Riley

WINDOWS ONLY

I have subscribed to PC Authority since issue one (Incidentally, I still have it) to learn as much as I can about Windows and the hundreds of programs and hardware connected with it. I have viewed Linux and I am not very interested. I don't even bother to read the two pages that appear in the magazine, so if you start filling the pages with Linux, I feel you will lose many readers. Although T Young (February 2006, page 21) says

Linux is virus free, the weird people that construct viruses get their kicks by disrupting users' computers and majority of them are Windows users. If only half of the world's users started using Linux, I wonder how long it would remain virus free?

D Logan

BEST ISS?

I was very disappointed to

see that the newest Internet security suites from Zone Alarm, McAfee and Symantec all had bad reviews. They slowed down startup or didn't have a good anti-virus. Which one is the best on the market? It is very confusing when people without computer knowledge go shopping and come home with something that doesn't give them full protection! Why do security companies not change the bad features of the last version and make them better in the new one? I have been using Norton Internet Security 2005 and was disappointed so I switched to Zone Alarm firewall and AVG anti-virus. I also use Spybot and Ad-ware. I had no problems. This brings me back to my first question: which new suite is the best?

David Kidd replies:

While it's true that some of the old stalwarts are becoming bloated, we firmly stand by our recommendation ▶



STAR LETTER: The waiting game

In many computer magazines, we hear about new optical disc technologies such as Blu-ray or HD-DVD. Sure, they seem good when we read the details on paper, but how long until we actually get to experience these new technologies first hand?

It seems like it has been an eternity since Blu-ray and HD-DVD were first uncovered, but we still have not had any personal experience with them. As I'm writing this letter, I have seen that Panasonic has finally unveiled prices for Blu-ray optical media. However, as good as it may sound, the prices are ridiculously high,

and once again, we play the waiting game for the prices to drop.

It seems the first brush we will have with either technology will be when PlayStation 3 is launched, using the media as the format for its game discs. On reading the news, I see that yet another optical disc technology has been revealed called HVD (Holographic Versatile Disc). Good on paper, but yet again we play the waiting game. Somehow, I don't think the mid-2006 release date for HVD will be met, and will follow suit with Blu-ray and HD-DVD.

M Dimitriadis

Anyware has kindly supplied us with a Plantronics Pulsar 590A Wireless Bluetooth Headset for this month's Star Letter. Worth \$299, you can seamlessly switch between your Bluetooth phone and your favourite music or movie so you'll never miss a call. With up to 12 hours of talk time and 10 hours of listening time, you can enjoy wireless stereo listening on laptops, PCs, TVs, DVD and MP3 players. For more information, head to www.anyware.com.au, or call 1300 269 927.



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of ZoneAlarm, which has been a clear winner in our benchmarks for some time.

DATING IN NZ

After reading in your February issue about the Friends Reunited site being sold for \$350 million and the site RSVP being sold to Fairfax, I thought I'd shamelessly send you our tale of woe about a dating site from little old New Zealand. A year ago, my wife told me I wasn't to go on dating site message boards unless it was our site, and I foolishly thought to myself, what a brilliant idea.

And so www.DateFinder.co.nz began with us looking into development quotes. These ranged from around US\$10,000 from an India-based developer to NZ\$50,000-NZ\$80,000 from NZ web developers. After a recommendation, we went with a NZ developer who said they could probably do it for \$10,000 if we used a \$1000 dating template that they would modify and add to. A year on and NZ\$25,000 later, we still don't have all the features we wanted, although we do have a great site for half as much as most quotes.

We'll always be left wondering what could have happened if we went with the India-based developer. And then there was advertising costs to get it off the ground - about NZ\$5000 for the production of a simple TV ad and another NZ\$10,000 to run

it for a month off peak on a not so popular channel. In retrospect, I think we should have put that ad money straight into Google Adwords. About NZ\$45,000 later, we have around 2000 members and don't look like turning any profit until we have perhaps 10 times that many, which could be around 2007. So looking back, would I do it again? Definitely yes - it's been loads of fun.

WHAT'S HOT 2006?

What's ahead of us in 2006 to protect us from viruses? We seem to be like the proverbial frog sitting in the water as the temperature continually rises. We need to do something before boiling point is reached. Viruses are now of epidemic proportions and the Year of the Trojan ("Security in 2006" February 2006, page 26) is upon us.

Is moving to another operating system the answer? Staying with Windows, even with the Vista upgrade, has a 'same-old, same-old' feeling about it; a sense of keeping one step behind the enemy.

Can Linux provide some real competition this year and give us a fresh approach to the epidemic? Is 2006 the Year of Linux?

Kenio

BOOTVIS SPEEDUP

I have been reading PC Authority since its first issue, and for years now it's the only PC magazine I buy religiously. This is however the first time I have been compelled to write and say a big thank you.

I just had to write in about BootVis (Advanced Windows, March 2006, page 110). Jon Honeyball's articles are always great reading, but this one made me act immediately. Found it, installed it, used it, and wow - it does work. My home computer is an Athlon 3000+ with a few HDD, 1GB ram, etc. It's not state of the art, but its not slow. However, it has been taking forever to boot - average time is just under two minutes. Well BootVis has changed all that, with just the one optimisation, it's now down to a respectable 70 seconds. This to me is a huge improvement - imagine any other upgrade, either hard or soft, that gives an 80 percent speed improvement!

So, whilst I have learned much over the years from your mag, this one just had to be given a special mention.

B Butterworth

GETTING IN TOUCH

MAIL Inbox, 52 Victoria Street, McMahons Point, NSW 2060.

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EMAIL inbox@pcauthority.com.au

FAX Inbox, PC Authority on

(02) 8399 3822

Please limit letters to 200 words.

PC Authority extends a hearty congratulations to this month's competition winners.

The high performance range that brings your office up to speed.

There's never been a better time to upgrade your office image communications. And Ricoh's range of multifunctional devices now feature the fastest colour copier in Australia. The new Aficio Colour 5560 prints at a lightening fast 55 colour pages per minute. Just like all our MFD's you can tailor it to maximise your productivity and reduce your document production costs.

The big range with big features: All seven new generation Aficio models feature the latest in colour control, security and network features, as well as improved imaging and toner technology.

Productivity: Output speeds from 10 to 55ppm in colour and 24 to 60ppm in black & white. Quicker 1st print speed. Less warm up time. Memory storage up to 320GB.

Control colour: Limit colour printing to those who need it with User Code Access. There's even an option to monitor and distribute costs to each user group.

Security: Ricoh's Aficio range boasts Data Encryption and HDD Data Overwrite to prevent data theft, MFD access via standard PC user password, as well as password activated printing for confidential documents.

Networkability: Ricoh devices integrate with a broad range of network systems, including Wireless LAN, Bluetooth, USB 2.0 and Firewire for printing at up to 400Mbps.

So if you're looking to upgrade your office communications call Ricoh on 1800 181 002 or visit ricoh.com.au/smartofficecolour today.



Aficio Colour 5560 55/60ppm



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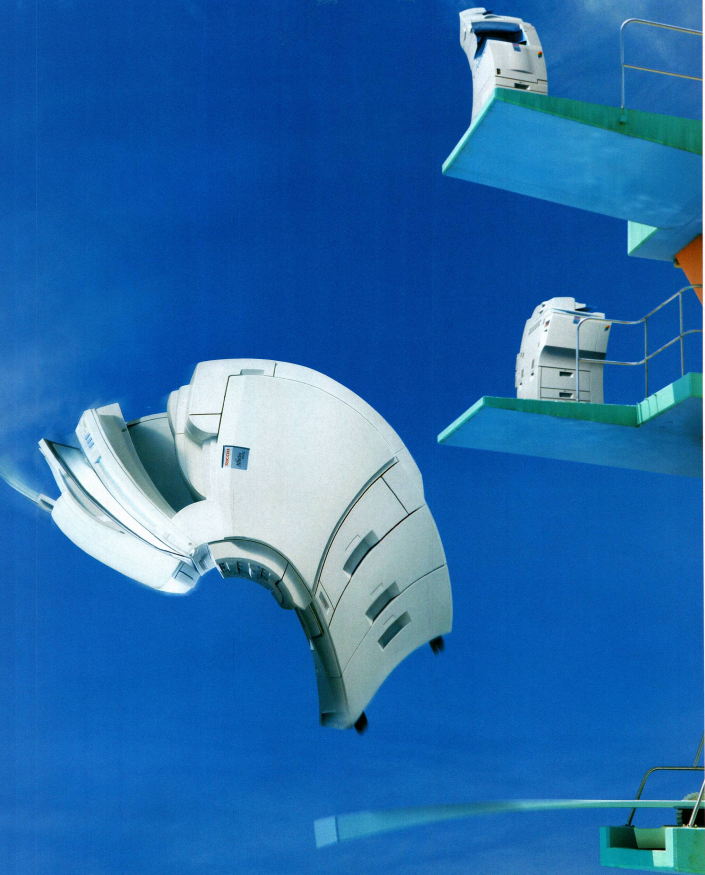
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The most flexible range of colour printers.

RICOH

ESSENTIAL FILESHARING

Peer-to-peer networking is far from dead.

David Kidd looks at the future of file sharing, and how to get the most out of it.



Ftechnologies have had a more sordid past than peer-to-peer networking. The Napster revolution in 1999 created an unstoppable crusade from users that wanted to share files, and copyright holders trying to prevent it. But like

a multi-headed hydra, with each court battle that shut down one network, another would spring up, and we now have more choice than ever to share files. Copyright infringement may be its main use at the moment, but it's an ignorant assumption that piracy is its foundation. People want to share information, and they want to use

the technologies available to them to do it. And they will.

Strings of lawsuits later, and P2P is showing no signs of decline. It currently accounts for more Internet traffic than any other medium, and businesses are trying to harness its power to distribute content faster, cheaper, and wider.

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Piracy is still rampant, but peer-to-peer is now entering a new phase of maturity, where private, secure networks are helping groups connect together, and technologies like BitTorrent have revolutionised the way files are distributed

P2P now offers more ways for people to connect than ever before. While Napster dealt a

healthy blow, and Kazaa made a slight detour, the future of P2P is brighter than ever.

This feature looks beyond the teething problems and examines the future of P2P networking, the latest networks, and how you can make the most out of the original bad boy of the Internet.

POWER TO THE PEOPLE

At its core, the Web has always been peer-to-peer. The fact that any individual with an Internet connection, a PC and HTTP server software can throw up a site contributed significantly to the exponential expansion of the Web, and the Internet as a whole. But while the early Web ▶

COMING SOON!



THE BEST THING TO HAPPEN TO FIREFOX... SINCE FIREFOX

WHAT IS ALLPEERS?

AllPeers is an upcoming Firefox extension that will let you securely share files directly from the browser.

centralised server to function. When a node connects to a decentralised P2P network, it will often connect to a small number of nodes that are (hopefully) online. Each node that it

connects to is also connected to its own list of other nodes, and so on until, in theory, each node can form a link to every other node.

To search for a file, a request is sent out to only those nodes that have a direct connection, and the request is subsequently 'passed on' to other nodes on the network. By not having a central point of failure, this can keep the network always up and running. However, searching for files can be slow as the user waits for all nodes on the network to return the results.

featured interconnected, distributed nodes (web servers), it was still based on a traditional client/server system, rather than the P2P networks around today.

The first mainstream P2P services used a combination of interconnected nodes (or peers) and centralised tracking servers. These servers aren't involved in the file transfer, rather they act as 'matching' services to connect one node to another. The most well known network to use this strategy was Napster. Napster was

'But is this just an industry built on copyright infringement? As a whole, few would argue that these networks didn't facilitate illicit filesharing.'

predominantly a music sharing network, which hosted a server to track users and files. Even though the actual process of file swapping was happening between the nodes, Napster's involvement led to its eventual demise where it was ordered to pay several millions of dollars to copyright holders. Only recently, after being acquired by Roxio, has it relaunched into a legitimate business.

But far from stymieing the use of P2P networks, it initiated increasing interest in filesharing, driving the creation and use of decentralised networks which do not need a

All networks around now use either centralised or decentralised formats, and often a combination of both.

THE OLD SCHOOL CREW

Since the downfall of Napster in 2001, new networks sprung up to fill in the gaps, with FastTrack, Gnutella and eDonkey being the most popular. The FastTrack protocol lies beneath services like Kazaa, Grokster and iMesh, and relies on certain clients acting as supernodes to speed up file searching. Kazaa is the most recent to hit the headlines, after an Australian court

found that the owners knowingly allowed its customers to trade copyright files (see Court Side). The upshot is that Australians can not officially download the client from the Kazaa website.

The eDonkey network uses dedicated servers to track and locate files, rather than relying on supernodes. eDonkey is a massively popular service, and according to research firm CacheLogic, is the most popular method for trading video files.

Gnutella takes a slightly different tack to eDonkey and FastTrack by delivering a pure, decentralised network. It was originally developed by Nullsoft developers, Justin Frankel and Tom Pepper of Winamp fame. While Nullsoft was working under AOL, the pair released Gnutella without AOL's knowledge. AOL subsequently canned the project, but the software (and source code) had already been downloaded in the thousands. Without a centralised server, the network can't be shut down – once it's up, it's up.

Looking beyond the major players, there are many more networks lurking in the background. Some, like MP2P, are exclusively used for music, and others will restrict clients from connecting unless they offer up a library of files to share. The net effect of the many networks, each with their strengths and weaknesses, provides a collective mesh of peers where you can find anything you want.

But is this just an industry built on copyright infringement? As a whole, few would argue that these networks didn't facilitate illicit filesharing. You could even take it a step further and suggest that these networks not only rely on it, but were created because of it – something that the court house dramas over the past few years will attest. But if we look past the rampant piracy, there's a whole new world of legitimate P2P brewing out there.

IT'S RAINING BITS

One of the most significant moments in Internet history was when lone programmer, Bram Cohen, unleashed BitTorrent in 2002. Prior to BitTorrent, if you wanted to distribute a large

COURT SIDE

It's against the law to download and share copyright material, but what of the companies that simply run the technology underneath? Napster was the first off the blocks to make mainstream filesharing easy and convenient, and it was also the first on the chopping block.

Sued in 1999 by the RIAA (Recording Industry of America), and shortly after by Metallica, Napster was accused of contributing to copyright infringement. This led to many months of legal wrangling, culminating in the company being forced to remove copyright material from its service. After coughing up over US\$30 million in settlements, Napster filed for bankruptcy mid-2002.

Filesharing fiends weren't put

out in the slightest, however, as new networks were popping up in the dozens. One of the newcomers, Kazaa, gained rapid popularity, with software downloads in the vicinity of 230 million. It consequently became a large target for the recording industry, and a high profile cat and mouse chase ensued as authorities attempted to find someone, somewhere, that they could take to court. And with a company that's based in Vanuatu, managed by contractors, with servers hosted in Denmark, and a domain registered in Australia, it's not as easy as it sounds.

Despite the fantastic web that Sharman weaved, an Aussie court ruled that Kazaa facilitated copyright infringement and demanded the company modify the software for Australian distribution. That didn't happen, and Kazaa can no longer be officially downloaded within Australia.

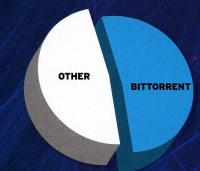
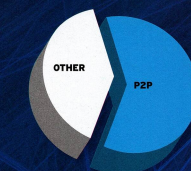
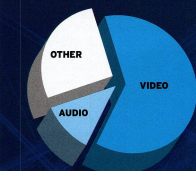
BY THE NUMBERS

According to research by CacheLogic, P2P makes up a massive proportion of Internet traffic:

WHAT'S TRADED OVER P2P NETWORKS?

P2P MAKES UP 60% OF ALL INTERNET TRAFFIC AROUND THE WORLD.

IN AUSTRALIA, MORE THAN HALF OF ALL P2P TRAFFIC IS BITTORRENT.



file, you'd likely be charged through the nose in bandwidth, and the more popular the file, the more demanding the load on the server. Consequently, you either have an expensive server farm to keep up with demand, or your server would crawl to a stop as it tried to fulfill the many requests.

BitTorrent changes that by turning the process upside down. By using the bandwidth of each person who wants the file, rather than a series of one-way client connections to a single server, popular files are distributed faster and cheaper. That a file could be better distributed with more people was an absurd notion five years ago, but for those that deal in large files, it's now an indispensable distribution method.

In order to start downloading with BitTorrent, you first download a very small file with a .torrent extension. The tiny files contain information about the original file, as well as the location of the tracking server. When the .torrent file is loaded into a BitTorrent client, the client contacts the tracker to discover which peers have the data you need. Once you've started collecting data packets, the tracker will then let the other peers know, who'll then start asking you for data.

The net result is that no matter how many users are after a file, there's little chance of a bottleneck forming – and with more users, you'll often get a faster connection. Of course the reverse is also true, where an unpopular file will often be slower than a dedicated server, due to the lack of peers to download from.

Another distinction is its use of the Web as a searching tool, where other P2P programs require direct searching of the shared files of other peers, or accessing a designated indexing server. Few search engines can compete with the speed of a Google search, and this is a major strength of BitTorrent.

Given its advantage in distributing large files, the most common file types winging their way around

BitTorrent networks are videos, games and software packages like Linux distributions. It also has a place in commercial online distribution services, with Cohen himself having been brought into Valve to work on its online distribution service, Steam.

Despite its uses in distributing copyright media, which constitutes the majority of BitTorrent downloads, its robust system makes it ideal – and in some cases necessary – for any type of large media. This alone helps BitTorrent attain an air of legitimacy, letting it stand apart from the pirate havens of classic P2P networks.

THE NEW BREED

Today, there's more choice than ever with P2P. If you're not interested in jumping into the wild world of Gnutella, eDonkey and BitTorrent, you could take a look at the latest crop of applications that let smaller, like-minded groups share files in private. Specialised services are starting to pop up which let you trade, for example, just photographs with Pixpo (www.pixpo.com) and ShareAlot (www.sharealot.com) being two examples. These services effectively turn your PC into an image server that lets you invite

others to view or download your collection, without going through a central server.

In addition to individual files being passed among users, businesses can take advantage of P2P to collaborate on group tasks and share files among designated users. This can be a quicker, one-stop solution compared to the traditional use of VPNs, email and attachments. Groove Virtual Office (www.groove.net), for example, combines filesharing, instant messaging, and typical workflow management tools. Additionally, it not only cuts down on the amount of large emails passing between a group, but it also reduces bandwidth by only transmitting the changes made to a file, rather than the whole file itself. Groove is a good example of how a P2P backbone can be customised to different applications.

But to really get a sense of how far P2P has come, applications like Qnext, WASTE and Grouper shine as examples of all-in-one filesharers. In essence, these apps forego the large world of P2P, instead focusing on private groups. Qnext (www.qnext.com), for example, not only lets you share files, but it bundles in private IRC chat rooms, remote desktop access, and even

access to your MSN, Yahoo! or other instant messaging account. WASTE (<http://waste.sourceforge.net>) takes another approach entirely, offering heavy dollops of security rather than focusing on too many features.

With this recent flood of legitimate applications employing P2P technologies, and with Internet bandwidth being chewed up more and more with filesharing, the future is certain. While traditional uses of P2P networks have been dominated by the swapping of large scale, pirated content, applications like WASTE, Qnext and Grouper suggest many users are interested in sharing personal files with smaller, private groups.

▲ Back from the ashes: the new face of Napster.

TIME LINE

1980

Usenet becomes the first peer-based exchange tool.

1988

First IRC server launches.

1991

Tim Berners-Lee creates the first HTML-based website.

1999

Shawn Fanning launches Napster.

2000

Justin Frankel and Tom Pepper launch Gnutella.

2001

Kazaa and FastTrack hit the wires, gaining rapid popularity.

2002

Napster files for bankruptcy
Bram Cohen releases BitTorrent.

2003

Frankel launches private P2P tool, WASTE.

2004

Onext, a next generation file sharer, appears.

2005

Aussie court finds Sharman facilitated copyright infringement with Kazaa.
Bram Cohen and the MPAA agree to remove copyright links on his search engine.

THE DARKNET

The term Darknet is commonly applied to private networks made up of trusted peers. Unlike large networks like Gnutella, FastTrack or eDonkey, Darknets are usually smaller, and made up of selected people.

For this reason, Darknets are also called friend-to-friend networks, and in fact such a broad definition need not be restricted to computer networks – it can also be a group of friends trading photographs by burning them to CD.

One common type of application used to create Darknets is WASTE. It employs heavy encryption to generate a private and public key for each user. The

public keys (which are used to encrypt information and join the network) are traded among members, creating a 'trust' network of users that can typically only be penetrated if someone on the network lets it happen.

(For more information on WASTE, see 'WASTE not, want not' in this feature.)

But despite its ominous name, Darknets have a very valid use in creating private networks for sharing any kind of information.

In particular, businesses (which are themselves organisations of trusted members) can benefit by having a tightly locked down, distributed network that spans continents.

THE FUTURE OF P2P NETWORKING

In August 2000, Intel's chief technology officer Pat Gelsinger had this to say: 'The power of this model would be very significant and complementary to the business models we've seen emerge. Out of this early momentum, this technology foundation, we'll make a very bold suggestion today. That peer-to-peer computing could usher in the next generation of the Internet, much as we saw Mosaic spark the last.'

The key point here is not so much Gelsinger's prediction, but that business models would adapt to P2P technologies. Few could deny the immense power of technologies like BitTorrent as a distribution method, and private networks are opportunities to target like-minded groups of people. Games will be first off the block, with Steam and Blizzard already distributing their

Another exciting angle is using P2P to form the backbone of television and video distribution to a wider audience. Warner Bros has recently announced it will launch a P2P service in Germany, recognising the need to combat piracy by providing a legal alternative that's just as easy to use as an open filesharing network. In the UK, the BBC has talked about introducing P2P technologies to distribute its online video archive to an Internet audience. Finally, wily marketing departments throughout the world have also started using the medium to get their canny advertising film clips which, despite carrying a brand message, are also funny and interesting to watch – thus ensuring they'll spread virally throughout P2P networks.

But until big business catches the wave, legal P2P content will remain a bastion for independent artists around the world. Already, you can find thousands of short films, TV clips, songs and software that would otherwise be difficult to spread to your audience.

We've just scratched the surface for the future of P2P, and that's because few can really predict the many ways it will be used. If the cost of distributing all forms of digital media is no longer relative to demand, then there's no limit to the size of the audience that content makers can reach. The proportion of illicit copyright material traded over networks will soon diminish as legitimate uses tap into its power.

To say P2P is back with a bang is an understatement. It's about to go supernova.

'To say P2P is back with a bang is an understatement. It's about to go supernova.'

large, highly demanded files to thousands of users every day. In addition, software makers are already starting to offer torrent files of their applications to reduce bandwidth costs. Furthermore, there are many legal places to download files from. Legal Torrents (www.legaltorrents.com) is one example that lists media released under a Creative Commons license, which promotes sharing.

WASTE ON LINUX

We had some difficulty getting the Linux version of WASTE to install on two of our test systems. Not to be put out, we grabbed the Windows client and installed it using Wine on our Ubuntu and Gentoo systems. To install under Ubuntu, first enter:

```
sudo apt-get install wine
```

Now go to the directory where you downloaded the Windows WASTE installer and enter:

```
wine waste-setup-1.5-beta-3-full-eng.exe
```

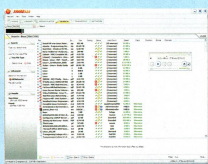
If all went to plan, you can now go to step one and install it as if you were running Windows.

FILESHARING 101

If you're new to P2P, use this handy primer to get you started. **Note: PC Authority doesn't encourage illegal filesharing across any network.**

Step 1 Installing

There are two popular ways to access global filesharing networks. The first way is BitTorrent, and the other way is by hooking into one of the existing worldwide networks like eDonkey or Gnutella. We'd recommend having clients installed on your PC that can access all three forms. Check out our BitTorrent client reviews in the feature and grab the one that suits your needs, and to access eDonkey and Gnutella, nab yourself a copy of Shareaza P2P (www.shareaza.com). Alternatively, if you just want a one-stop shop for all P2P networks, just stick with Shareaza - it'll handle BitTorrent as well.



▲ Shareaza is a neat all-in-one P2P package that downloads torrent files and accesses both the Gnutella and eDonkey networks.

Step 2 Searching

The next step is finding something to download. BitTorrent users can typically grab torrent files on the numerous legal sites out there. You can find content like classic movies from Public

Domain Torrents (www.publicdomaintorrents.com), or find fanmade remakes of TV shows like those at Star Trek: New Voyages (newvoyages.mine.nu:1701).

There's also an increasing amount of independent bands releasing free music, or allowing users to trade live show recordings (<http://bt.etree.org>). Big bands are also getting in on the act, with Harvey Danger (www.harveydanger.com) releasing its third album as a free direct download, or as a torrent. Finally, for more general torrent sites, check out sites like Data Galaxy (www.datagalaxy.net), which acts as a repository for popular content across multiple categories.

▲ Big bands are also using P2P to spread the word.

If you're using Shareaza to access eDonkey or Gnutella, you can make a direct search via the search window. Note that you'll come across content that may not be legal, so be sure to check it out beforehand, or search the sites above for the names of files. You can also refine your search on the left-hand search pane, by selecting movies, documents, software or music. Additionally, you can limit your search to either Gnutella or eDonkey networks, which could potentially speed up the search.

Step 3 Downloading

If you're using a separate BitTorrent client, just download the

torrent file from one of the websites. Remember that torrent files aren't the full file - they're simply 'pointers' to a tracking server. Now, open your BitTorrent client and just drag and drop the torrent file onto it. After contacting the tracking server, it'll then seek out other users that are also downloading the file and start gathering data from them.

In Shareaza, just double-click on the file from the search results, and your download should start up straight away. To check up on how your download is going, click the Transfer button on the top toolbar. It'll also show you if your own files are being uploaded by someone else.

Step 4 Troubleshooting

The most common types of technical problems arising from P2P applications involve networking. If you're running a personal firewall, there's a good chance it's blocking your outbound or



▶ Star Wreck: In the Pirkinning (www.starwreck.com) is free, feature length sci-fi parody that gained mass media attention when it became the most watched film in Finland of all time.

inbound connections. To get around this, you'll need to 'punch a hole' in your firewall to allow your client to access the Internet. Most firewall programs will pop up a window asking if you want to give it access, at which point you should answer yes. Otherwise, check the FAQ or technical help documents that come with your client or firewall.

If you access the Internet through a router, you may need to turn on NAT port forwarding. First, establish which port the client is using and the IP address that your PC is on (go to Run | CMD | ipconfig). Then jump into your router's administration screen, head to the NAT/port forwarding section, and enter which port you want forwarded, and the IP address you want it forwarded to.

Finally, you may have difficulty playing music or video files unless you have the right codecs installed. You can either install the codecs yourself (via a Google search) and use Windows Media Player to play the files, or grab the fantastic, all-in-one media player, VLC - complete with pre-installed codecs. Head to www.videolan.org for more information.

▶ If you're behind a router, you may need to forward the BitTorrent port to your computer's IP address.



PEER IN PRIVATE

Control the files you want, and who has access to them. Here are four of the latest next generation filesharing tools available.

Grouper

INTERNET: www.grouper.com PRICE: Free

Grouper, an all-in-one filesharer, facilitates both private and public sharing. The interface features an Explorer-like arrangement, which provides access to the Public Directory, Private Groups, files and Groovio. To connect with other members, you can send invitations to join your own private group, or browse for other groups and request invitations to join. Once in a group, you'll have access to shared directories of each member, letting you download any type of file, except music. Grouper only permits music to be streamed, and played back in the Grouper client. You can get around it by simply zipping the music files, but this could be a strong enough deterrent to prevent mass music swapping. The end-to-end 256-bit AES encryption prevents anyone, even Grouper, from seeing the contents of data being passed back and forth. A unique feature of Grouper is Groovio - a simple movie-making tool that lets you set music and effects to a video clip. There is also 'Glogs', or Grouper Blogs, which gives your profile a diary for other users to check out. It's a neat app, particularly if you see yourself becoming involved in the Grouper community. The interface itself works well for Windows users, and you can throttle bandwidth and configure ports if needed. Unfortunately, if you're interested in sharing music, this isn't the tool for you.

OVERALL



Qnext

INTERNET: www.qnext.com PRICE: Free

Qnext takes the gong for the most extraneous features crammed into what is essentially a filesharing tool. After registering, you can create designated zones, which hold directories of your shared files, and can also be used to create IRC chat rooms. Other users can then join the zone and make use of the chat room, as well as download files. There are no restrictions on the types of files being swapped. You can use Qnext to act as an instant messaging client with your messenger accounts (bizarrely, there's no GoogleTalk offering). You can also start a QnextMyPC remote desktop session. Any PC with the right login can then connect via a Java-enabled browser to Qnext-equipped PC and not just gain access to Qnext, but the entire system itself. In this sense, Qnext transforms itself into a very handy, browser-based remote access tool similar to VNC. The interface, however, consists of various tiled windows, which often displays too much information. However, once you're used to it, Qnext can handle everything you'd need it do. We could compare it to the feature-packed Azureus - both can be extended in many ways, and for those in multipatform environments, they'll run on Linux and Mac OS X. For a filesharer with the lot, look no further.

OVERALL



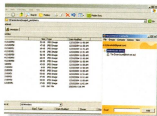
ShareDirect

INTERNET: www.laplinc.com PRICE: From US\$39.95

Rather than creating a dedicated interface manage files, groups and contacts, Laplink's ShareDirect plugs straight into Windows, integrating itself with the right-click context menu, and adding a toolbar to Explorer to access shared files and contacts. When opening up a designated shared directory, you're presented with a tabbed window inside Explorer, showing the files being shared, and who can view it. Simple but efficient. By not forcing you into another interface, ShareDirect is a quick and effective way to share files and add members while staying in the Explorer window. It's also very intuitive for existing Windows users, and business environments can benefit from not having to rely on IT departments to create designated domains. However, ShareDirect has a scaling price plan depending on how you use it. If it's to create direct connections to other peers, then it's free. If that isn't possible, (for example, one or both systems are behind a firewall), then you'll need a premium connection through Laplink's servers, which costs upwards of US\$39.95, depending on how much you use.

Ultimately, it can be a costly tool, but it's intuitive enough to get going quickly with relatively inexperienced users. It'll find a good home for itself as a self-administered private business tool.

OVERALL



WASTE

INTERNET: <http://waste.sourceforge.net> PRICE: Free

WASTE is a no-nonsense app that does one thing: sharing directories. It's spartan interface doesn't have any additional features, and it doesn't integrate at all with Windows. What's interesting about WASTE is its paranoid dedication to security which, while overkill for some, may be what some groups are looking for.

Where the other apps on test here hide the encryption process, WASTE relies on the user to take care of it. First up, you'll need to generate a key pair. This creates a private key, which you won't want to give to anybody, and a public key. In the case of two users, you'll need to swap public keys outside WASTE (like email or floppy disc) and then import them into the application. This alone is a strong barrier to entry, however the keys are also used to encrypt data as it files between each peer, ensuring only those holding the private key can access the file. It's quite complicated but once you're hooked up to a network, it's easy to search through the shared directories of all users, and a download is a double click away.

It's not for everybody. While the security is tight, many will find it unnecessary, and other applications here are far friendlier to use. If you decide to take the plunge, see the tutorial in this feature for a step-by-step walkthrough.

OVERALL

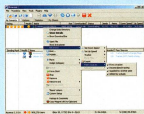


TORRENT CLIENTS

All BitTorrent clients will download torrent files, but they vary wildly in the amount of features they have. Here's a rundown on the most popular clients.

Azureus

INTERNET: <http://azureus.sourceforge.net> PRICE: Free



Azureus has it all. The vanilla installation packs in more features than most other clients out there, like support for anonymous protocols such as I2P and Tor, as well as built in support for UPnP port mapping and IRC chat. But to truly get the most

out of Azureus, you need to dive into the plugins directory. An installation wizard gives you access to an online repository of plugins, which can be installed via a BitTorrent download. The Speed Scheduler, for example, will let you throttle your download and upload speeds at designated times - handy if your ISP has an off-peak time. Or, you can install a web interface which lets you check up on your torrents, or add new torrents, from another PC anywhere on the Internet. A major drawback to running Azureus is the amount of resources it requires to run. It consistently clocked over 70MB on a single file, which is a far cry from uTorrent's comparatively tiny 8MB on the same file - Azureus comes at a price, particularly for low end systems.

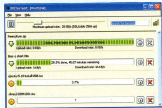
Despite this, we thoroughly recommend it for power BitTorrent users, and for those in a multipatform environment, you can't go wrong - it also runs happily on Linux and Mac OS X.

OVERALL



BitTorrent

INTERNET: www.bittorrent.com PRICE: Free



This is as bare as it gets with BitTorrent. Double click on a torrent file, and up pops a window telling you how long it has to go to finish. Its simple, focused approach to downloading torrents is a welcome alternative for those that

see torrent downloading just like any other form of file transfer. It presents a straightforward interface, with a speed slider to throttle the upload speed, and a search bar that takes you to the official BitTorrent.com search engine. The main window will let you drill down into more details about the files currently being downloaded, although not nearly as much information as the others on this page. The settings available for tweaking are minimal, although it does feature UPnP port mapping. Interestingly, it taxes resources much higher than uTorrent, which offers more features out of the box. We found its text-mode interface was a handy option for remotely accessing our Linux server. In addition to Linux, you can find packages for most operating systems, and if not, the source code is readily available. Although we found some handy uses for it, we'd recommend sticking with uTorrent. It's snappier, lighter and packs in far more features.

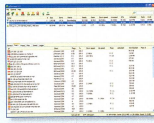
OVERALL



uTorrent

INTERNET: www.utorrent.com PRICE: free

Everything about uTorrent is efficient, from it's minimal use of system resources, to its carefully selected bundle of features. It focuses on keeping things tight and quick. uTorrent runs straight from the executable, rather than a setup, and manages to squeeze itself into a tiny 132KB file. From here, it snaps into action, with a layout resembling Azureus, without the horribly long loading time. Tabs in the bottom window gives you access to file statistics, like how long each chunk of a file has to go before its downloaded. It also supports DHT, which lets you continue downloading if the tracking server drops out, or disappears entirely. It also bundles in a speed scheduler, which lets you designate speeds depending on the time and day, and you can enable UPnP for Windows XP. Unfortunately, if you want to customise it further, you'll need to look to Azureus. Although Azureus is clearly an inspiration for uTorrent, the developers are committed at keeping it plugin-free. This is certainly not a bad thing, as its feature set is already more



extensive than many clients out there. It's undoubtedly a stellar package, and anyone looking to try out BitTorrent without taking the plunge into Azureus will find it fits the bill perfectly.

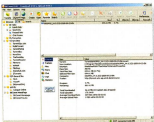
OVERALL



BitComet

INTERNET: www.bitcomet.com PRICE: free

BitComet, the friendliest inclusion in this roundup, has a sparkling interface and Explorer-like tree structure familiar to Windows users. It has shortcuts to a host of popular torrent sites, which you can browse from within BitComet's main interface window. The favourites tree will also take you directly to your downloads, seeds or chat rooms. Downloading a torrent also generates the usual pile of statistics, showing peers and tracker state. BitComet also supports trackerless torrents via DHT, and gives you a handy read-out telling you how many nodes you're connected to. It also supports UPnP mapping and automatic NAT configuring with Windows XP. Unfortunately, even in an idle state, BitComet chewed into our memory resources, although not as heavy as Azureus. For heavy BitTorrent users that want to customise their client with plugins, this isn't the one for you. But despite the resource drain and limited plugin support, BitComet packs a ton of features into its glossy shell, making this a good choice for newer users that want to explore the advantages of BitTorrent in a friendlier environment.



support, BitComet packs a ton of features into its glossy shell, making this a good choice for newer users that want to explore the advantages of BitTorrent in a friendlier environment.

OVERALL



WASTE NOT, WANT NOT

WASTE is another piece of software spawned from the brain behind the Gnutella network. However, rather than creating a platform for millions of users around the world to share files, WASTE is designed for small groups of users.

It also differs in its focus on security. To join a WASTE network, you need to exchange 'keys' with a host on the network, and all users need to add your key to their key ring. In addition, you'll need to know the IP address of the network, as well as the network's name, if it has one.

Rather than sending regular ones and zeros between each peer, the data is encrypted with the user's public key while in transit, and decrypted by the same user's private key. Thus, the only person that can decrypt the data is the holder of the key-pair.

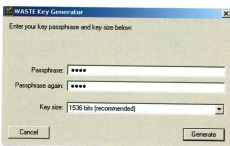
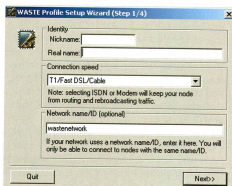
Consequently, WASTE networks are not only difficult to get into without knowing someone, but intruders will also have trouble snooping the data as it passes back and forth. It may seem like overkill, but this makes it important for businesses or other groups where tight privacy is a necessity.

Unfortunately, it isn't the easiest application to set up, so we'll show you how to get two computers to form a secure WASTE network.

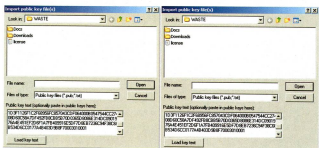
1 Head to <http://waste.sourceforge.net> and grab the relevant installer for your system. Once you've stepped through the installation wizard, you'll be greeted with a random number generator. In order to create highly secure keys, your system will grab as much randomness as it can, even if it involves wiggling your mouse around for a couple of seconds.

2 Enter in your

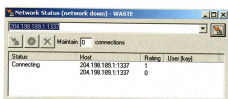
connection speed, a nickname and a real name if you want. You can also enter an ID for your network, which other users must know to make a connection. Following this, you'll be asked to enter a passphrase and create some more randomness - this will be used to generate your private and public keys.



3 Here you can designate which directories you want to share, separated by a point-to-point. A point to remember is that WASTE won't automatically scan that directory. At the end of the installation, go to Preferences | Sending and hit 'Rescan'.



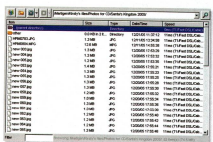
4 You should now be staring at a couple of blank WASTE screens. First, head to Preferences | Network | Private Key. From here you can copy your public key to the clipboard, and then paste into an email. Likewise, when your friend emails you their key, head to Preferences | Network | Private Key and either import the text file, or copy and paste it into the window below. Finally, if you're joining an existing network which has a designated ID, enter it Preferences | Network | Password.



5 With both keys ready to go and the network ID in place, you're ready to connect. Hit

Alt+N and you'll see the Network Status screen. Enter in the IP address of the user you want to connect to. If all goes well, you should be connected to your friend's shared directory. If things don't go well, WASTE won't let you know why, but there are a couple of possible reasons. First, ensure that both users have the corresponding public keys loaded. Secondly, if you're using a router, make sure you're using port forwarding for port 1337.

6 In the network, press Alt+B to bring up the browser interface and click the icon in the top left to find a list of users (exchange keys with other users). To download a file, just double-click and you're done.



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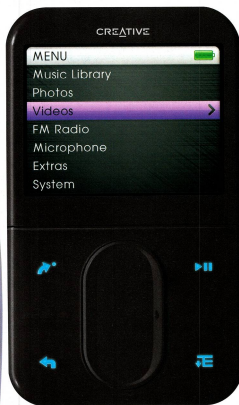
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How We Test

Our new benchmarking tests are the best in the business. Read on to find how they work.

2D BENCHMARKS

PC Authority's exclusive set of custom-designed benchmarks are based upon real-world, industry-standard applications. We run scripts to give each program a set amount of work and measure, to the nearest one-hundredth of a second, how long it takes to complete the task. We reboot between tests to prevent any caching.

Not only does this reflect actual performance as meaningfully as possible, it's done to a level of plus or minus 0.5 percent accuracy, putting other benchmarks to shame. They're also the only benchmarks that can convey the multitasking and encoding benefits of dual-core processors.

We divide the tests into four categories to reflect real-world usage: Office, 2D Graphics, Encoding and Multitasking. We use Microsoft Office, Adobe Photoshop, CorelDRAW, Discreet 3ds Max, Canopus ProCoder and Illustrate dBPowerAMP to test a system.

We record the time taken to complete each test and, using our Pentium D test rig as a baseline, calculate a relative score. So, a machine scoring 1.50 is 50 percent faster than our reference machine. The overall benchmark score is an average of each category.

TEST RIGS

Abit AL8 motherboard with 1GB PC2-4300 Crucial RAM for Intel, Asus A8N-SLI motherboard with 1GB Crucial PC3200 RAM for AMD; 10,000rpm WD Raptor hard disk; NVIDIA 6800 GT graphics.

3D TESTS

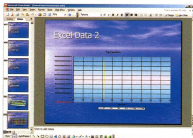
We use demos of Half-Life 2, Far Cry and Call of Duty 2 to test real-world 3D gaming power. We test at 1280 x 1024, 32-bit colour depth, with 4x anti-aliasing and 8x anisotropic filtering, or at 1600 x 1200 with High Dynamic Range (HDR) rendering, as appropriate.

NOTEBOOK BATTERY LIFE

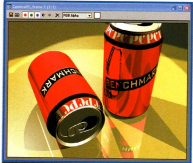
We subject notebooks to two battery tests. The first sees how long the notebook could stay on if idle. The screen is set to a minimum readable level and all processor power saving is turned on. Then, to test under intense conditions, we run a complex multitasking job until the battery runs out.

STAR RATINGS

EXCELLENT	★★★★★
VERY GOOD	★★★★☆
GOOD	★★★☆☆
AVERAGE	★★☆☆☆
POOR	★☆☆☆☆
DREADFUL	☆☆☆☆☆



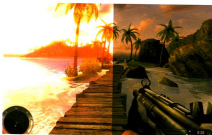
▲ The office test uses Microsoft Office 2003, with a number of tasks in Access, Word, Excel and PowerPoint.



▲ A complex scene in 3ds Max 7 measures a machine's computational performance.



▲ Encoding two streams of video simultaneously makes use of Canopus ProCoder's multithreading.



▲ Turning on HDR lighting in Far Cry makes the graphics better yet.

CHEAPEST PRICE RESELLERS	WEBSITE
Abit	www.abit.com.au
Advance Software Group	www.advancesoftware.com.au
AI Tech	http://ai.tech.com.au
Altach	www.altach.com.au
AmerCom	www.amercom.com.au
AusPCMarket	www.auspcmarket.com.au
Aster Tech	www.astertech.com.au
Bargain.net	www.bargain.net.au
BBC Tech	www.bbc-tech.com.au
Best Buy	www.bestbuy.com.au
Bing Lee	www.binglee.com.au
Buy Quick	www.buyquick.com.au
Camt	www.camt.com.au
Camera Warehouse	www.camera-warehouse.com.au
Centricom	www.centricom.com.au
City Software	www.citysoftware.com.au
Computer Alliance	www.computeralliance.com.au
Computer Online	www.computeronline.com.au
Digiplex	www.digiplex.com.au
Digital Cameras	www.digitalcameras.com.au
Digital City	www.digitalcity.net.au
Digital City	www.digitalcity.net.au
Digital Yes	www.digitalyes.com.au
digitecenter.com.au	www.digitecenter.com.au
Dodo	www.dodotech.com.au
DPI Systems	www.dpi.com.au
E-Shop	www.e-shop.com.au
Electric Discount	www.electrictdiscount.com.au
Engagen	www.engagen.com.au
Expansys	www.expansys.com.au
Evo	www.evo.com.au
Formosa	www.fsg.com.au
Gadget.com.au	www.gadget.com.au
Gentle Computers	www.gentle.net.au
Hartness	www.austrialdigital.com.au
hardynormals	www.hardynormals.com.au
Harris Technology	www.ht.com.au
Harvey Norman	www.harveynorman.com.au
Home Zone	www.homezone.com.au
Implex	www.implex.com.au
Intuitive Mind Solutions	www.intuitivemind.com.au
Instant IT	www.instantit.com.au
InterWeb	www.interweb.com.au
IT Electrical	http://www.it-electrical.com.au
ITech	www.itech.com.au
Jantech Computers	www.jantechcomputers.com.au
Kadek	www.kadek.com.au
Kayell	www.kayell.com.au
Legend	www.legend.com.au
Little Computers	www.littlecomputers.com.au
Mega PC	www.megapc.com.au
Mix Digital	www.mixdigital.com.au
MMT	www.mmt.com.au
MP3 Direct	www.mp3direct.com.au
MSY	www.msy.com.au
NCHS	www.nchs.com.au
Netic	http://www.netic.com.au
New Computers	www.newcomputers.com.au
Newell Computers	www.newell.com.au
Ninik	www.ninik.com.au
Notebook Land	www.notebookland.com.au
Notebook.com.au	www.notebook.com.au
Notebooks R Us	www.notebooksrus.com.au
Pac Star	www.pacstar.com.au
PACOM	www.pacom.com.au
PC Express	www.pc-express.com.au
PC Home	www.pchome.com.au
PC Market	www.pcmarket.com.au
Pioneer	www.pioneer.com.au
Plus Corporation	www.pluscorp.com.au
Quality Camera Stores	www.qualitycamera.com.au
RCCS	www.rccs.net.au
Road Mogul	http://www.roadmogul.com.au
Scoratic	www.scoratic.com.au
Secret	www.secret.com.au
Simline	www.simline.com.au
Techboy	www.techboy.com.au
The Smart Shop	www.thesmartshop.com.au
Wagga Wagga	Wagga Wagga 02 6921 9952
Willi Oregon	www.willioregon.com.au
Zip Computers	www.zipcomputers.com.au



View from the labs

A bite out of Apple?

Back in 2000, a marvellous item went on sale: Creative's 6GB DAP Jukebox. This was arguably the MP3 player that started it all. The Napster pioneers had popularised MP3 and now here was something which let you play your entire music library away from your PC. Okay, so the battery performance was woeful, the USB 1.1 interface meant transfers took hours and encoding your CDs on contemporary PCs was a labour of love which took weeks. But its early adopters loved it.

Since then, Creative has been playing catchup to the likes of iRiver, Rio and Apple. Its players have always felt as cheap as they were, and despite a huge product catalogue, only the Zen Micro seemed worth a look. But now, after six years of waiting, the Zen Vision:M has arrived and, after only a glance we just knew that at last Apple was going to get a run for its money.

And, for the industry's sake, it's about time too. When the third generation iPod appeared and became one of the world's most phenomenal brands ever, we were at great pains to tell anyone who'd listen that it actually wasn't very good. There were loads of better choices to be made: iRiver, Rio, Cowon and others had Apple licked in terms of performance and features.

But then the iPod Mini appeared, followed quickly by the fourth gen iPod which combined many of the Mini's enhancements with third gen glitch-fixes to make a very good audio player indeed. Since that time, everybody else has been playing catchup. By the time the likes of the iPod Photo and iPod Shuffle appeared,

Apple had annihilated the market place, offering design, performance and features at prices which left rivals downright uncompetitive. Remember Creative 'laughing' at the iPod Shuffle and its lack of screen, before realising that the new solid-state iPods were flying off the shelves and that Creative's solid-state drives had to have their prices slashed in response? The subsequent launches of the iPod Nano and the newer Video just seemed like final nails on the coffins.

But to me, the most troubling aspect of all this was iTunes. Everybody may want an iPod but few people know how one works. People see songs for 'sale' in iTunes and naturally think that they are 'buying' them, when, as we know, they're arguably only 'renting' them.

It's interesting to see what's going to happen in the coming years. People who bought into Apple will be buying the new players from Creative (and Sony) and find that 'their' music that they 'bought' won't work. Great big Class Action lawsuit anyone? That'll teach them for forcing folks to download Quicktime player

with downloading iTunes in some

should-be-illegal 34.7MB download file. Of course what is more likely is that we'll witness the launch of the aggressively-priced, revolutionary 7th gen iPod Hologram Camera Gaming Console* instead.

Back from the dead

When ATI's CrossFire system first worked in our offices it looked very much like something that was dead on arrival. Its release also coincided

'Witness the launch of the revolutionary 7th gen iPod Hologram Camera Gaming Console.'

with a time when the company was massively restructuring and its major competitor was storming the market with its 7800 chip. It looked like ATI had lost the plot, and even when the X1800 was launched, availability was limited. Well, the good news is that ATI is back. The company is adamant that it's got its house in order and from now on when products are launched they will be immediately available. It looks to be the case with the X1900 cards and CrossFire master cards will be available imminently.

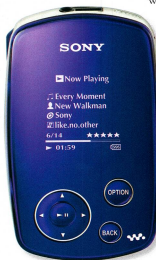
However, high-end AGP cards certainly won't be around for the foreseeable future – unless NVIDIA's launch of the AGP-based 7800 GS proves a massive success. We'll be bringing you the results from that test, and from the new, fully-operational CrossFire cards, next month.

NICK ROSS, LABS EDITOR

*Yes, I know – actually the Hango/Remote Solutions Personal Jukebox PJB-100 was the first iPod-like hard disk-based MP3 player, but Creative's was the first globally popular one.

THANKS TO...

It requires a whole host of supporting products to review our PCs, notebooks, components, peripherals and software each month. So a big thank you goes out to AMD, Asus, WD, Crucial, Internode, Unwired, Draytek and Belkin for providing their products and services to our Labs.



NEXT MONTH - INK COSTS EXPOSED

If you're wondering what has happened to our coverage of inkjet printers, all can be revealed. We've been testing them harder than inkjets have ever been tested before.

Find out which printers waste up to three-quarters of the expensive ink you put in them and find out which ones don't. Whose ink fades away and whose can withstand years of sunlight? All of these questions, and more, are answered next month in the most exhaustive round up Australia has ever seen.



512MB Cards

You Pick!



7800GTX
"Recommended"
Oct 2005 Australia



7800GTX
"Power Award"
PC Power Play
Sep 2005 Australia



7800GTX
"Top Buy"
PC User
Oct 2005 Australia



7800GTX
"Labs Winner"
PC Authority
Nov 2005 Australia



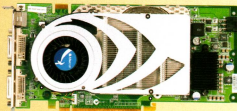
7800GTX
"Recommended"
PC Authority
Oct 2005 Australia



6600-512



- NVIDIA GeForce 6600 GPU (Clock 350Mhz)
- 512MB, 128-bit DDR2 Memory
- Superscalar 8-pipe GPU Architecture
- Innovation PCI Express with DVI/D-sub/TV-out ports
- Supports SLI technologies
- CineFX 3.0 engine supports Microsoft DirectX 9.0c Shader Model 3.0
- Supports Intellisample 3.0 UltraShadow II



7800GTX-512



- NVIDIA GeForce 7800GTX GPU (Clock 550Mhz)
- 512MB, 256-bit DDR3 Memory
- Superscalar 24-pipe GPU Architecture
- Innovation PCI Express with Dual DVI/TV-out ports
- Supports SLI technologies
- CineFX 4.0 engine supports Microsoft DirectX 9.0c Shader Model 3.0
- Supports Intellisample 4.0 UltraShadow II



6600LE-512



- NVIDIA GeForce 6600LE GPU (Clock 325Mhz)
- 512MB, 128-bit DDR2 Memory
- Superscalar 4-pipe GPU Architecture
- Innovation PCI Express with DVI/D-sub/TV-out ports
- Supports SLI technologies
- CineFX 3.0 engine supports Microsoft DirectX 9.0c Shader Model 3.0
- Supports Intellisample 3.0 UltraShadow II

VIIV Media Centre PC

Sony VAIO VGX-XL100

PRICE: Approx \$2300 **DELIVERY:** Depends on reseller
AVAILABILITY: 2nd Quarter 2006 **WEB:** www.sony.com.au

EXCLUSIVE

Sony has always gone its own way when it comes to its customers and computers interacting. Rather than rely on existing Windows features, its VAIO range of PCs and notebooks has had various proprietary software installed over the years, including one of the very first media centre front-ends called VAIO Zone.

So it's a shock to find the XL100 embracing someone else's standards; Intel's recently launched Viiv product (March 2006, page 50). In a nutshell, Viiv is Intel's latest attempt to make the Digital Home concept work: buy a Viiv PC and any Viiv-badged product and they'll allegedly mesh seamlessly. In the second half of 2006, a raft of entertainment services will boast the Viiv badge too. Gone is VAIO Zone, replaced by Microsoft's far friendlier XP MCE 2005 and underpinned by a raft of Intel's specially designed drivers.

That's not to say Sony has abandoned its unique approach to software, as the XL100 includes its fair share of quirky VAIO applications pre-installed: there's a media server, VAIO Media, which doesn't really do anything that MCE can't do more easily, and VAIO Information Flow, a new application that ties together various pages of information (international clocks, RSS news feeds) with basic music playback and photo slide-show features. It's an interesting idea, but, in a horribly missed opportunity, it remains entirely separate to MCE and doesn't even work well with its remote.

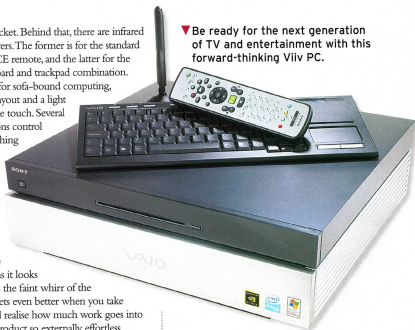
Back at the hardware, Sony's experience in the consumer market shines through. While much of

headphone socket. Behind that, there are infrared and RF receivers. The former is for the standard Microsoft MCE remote, and the latter for the wireless keyboard and trackpad combination. It works well for sofa-bound computing, with a good layout and a light notebook-style touch. Several shortcut buttons control volume, launching applications and powering the system on and off.

Switch on the unit, and the loudest element is the optical drive as it looks for a disc, plus the faint whirr of the hard disk. It gets even better when you take off the lid and realise how much work goes into making this product so externally effortless.

While we're still unconvinced that Intel's Pentium D is the best processor for media systems, Sony opts for a large custom heatsink to cool the 2.8GHz model in the XL100; notably it's the 65nm version. The GeForce 6600 graphics card (enough to run last year's 3D gaming titles at basic settings) is similarly cooled via a heatspice and radiator. Two 80mm fans at the rear draw in cool air over the RAM and through the heatsinks,

▼ Be ready for the next generation of TV and entertainment with this forward-thinking Viiv PC.



can archive and back up a good chunk of data on just one disc.

All in all, it's a fantastic example of how to build a Media Centre PC; you simply wouldn't guess from looking at it just how versatile and well integrated it is. Why Sony opted for the single TV tuner is a mystery – changing the hardware yourself will mean potential problems with Viiv compliance.

We look forward to seeing the final spec and price, but if it hits the market looking anything like this, we'll happily state that this Sony with its Viiv compliance and looks are to die for.

Ross Burridge

'The resulting chassis is something that most system integrators can only dream about.'

the distinctively stylish chassis is plastic, it still feels solidly constructed; not quite up to the standard of an expensive hi-fi component, but close.

The result is something that most system integrators can only dream of, from the seamless backplane to the swish front panel. The AV specification is impressive too: gold-plated analog line in/out stereo pairs are joined by optical S/PDIF in/out and a coaxial S/PDIF output. There's no cart, DVI or even VGA output for video – only component out and an HDMI connector. This is great to see. It's backwards compatible with DVI – and Sony includes an HDMI-to-DVI-I converter – so you can still hook up your current screen, but it means that when the new generation of HDMI screens and TVs become available, the XL100 will be ready. It even supports widescreen resolutions of up to 1080p.

There's Gigabit Ethernet round the back, plus an 802.11b/g card, complete with external aerial. Slide down the hidden front panel, and you'll find a 7-in-4 card reader, a full-sized and mini-FireWire, plus two USB 2 ports and a 1/2in

before expelling it through the back. There's another 80mm fan doing a similar job with the power supply and hard disk and you'll only really hear anything with your ear pressed up to the case.

Inside, you'll find an AVerMedia hybrid card, providing analogue, DVB-T and FM tuners. Sadly, the analogue tuner isn't visible to MCE and, as there's only one fitted, you'll be stuck watching anything that you're recording – rather spoiling the freedom of an all-singing, all-dancing Media Centre PC. You could add another via the spare PCI slot and backplane that rests just above it, but it would mean potentially voiding your warranty, so a USB version would be a more circumspect addition.

There's a sensible 1GB of RAM already present, leaving two slots free and easily accessible. You'll also find dozens of TV programmes and films on the 250GB Seagate Barracuda 7800.8 hard disk, with space to easily fit another two should that become too restrictive. The slot-loading DVD writer will cope with dual-layer media too, so you

SPECIFICATIONS

2.8GHz Intel Pentium D 920; 1GB PC4300 DDR2 RAM; Intel 945 custom motherboard; 250GB Seagate Barracuda 7800.8 hard disk; Matshita UJ-846D DVD writer; 128MB nVidia GeForce 6600 graphics; AVerMedia AVerTV Hybrid-FM PCI tuner card; Intel HD 7.1 audio; V92 modem; Marvell Libertas 802.11b/g WLAN; Adobe Premiere Elements 2; Adobe Photoshop Elements 4; Windows XP Media Centre Edition 2005; 1yr RTB warranty. Dimensions: 430 x 400 x 129mm (WDH). Weight: 10.5kg. Part code: TBC.

LABS VERDICT

A stylish and well-built example of what a Media Centre should be – a second TV tuner would be the crowning glory.

Performance ★★★★★
 Features & Design ★★★★★
 Value ★★★★★

OVERALL

★★★★★

Have you found the right one?

EXCEL

No matter what your looking for;
performance, entertainment or
 just doing **school homework**,
 we have the right one for you.



15" WIDESCREEN - M38AW

Intel® Pentium® M 770 Processor 2.13GHz
 Intel® Celeron® M360 Processor 1.4GHz
 128MB Nvidia GeForce Go 6600 Graphic
 15" 1280x800 WXGA display

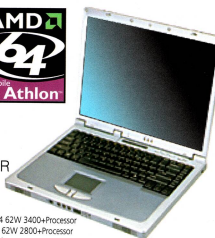
256/512/1024 DDR2 memory
 40/60/80/100/120 GB HDD
 DVD Dual/ Combo (DVD + CD-RW) Drive
 Built-in Camera



15" WIDESCREEN

M375S

Intel® Pentium® M 760 Processor
 Intel® Celeron® M360 Processor
 64MB Shared Intel Extreme graphic
 15" 1280x800 WXGA display
 40/60/80/100/120GB HDD
 DCD Dual/ Combo (DVD+ CD-RW) drive
 Built-in camera



AMD POWER

D410J

Mobile AMD® Athlon® 64 62W 3400+Processor
 Mobile AMD® Sempron® 62W 2800+Processor
 15.1" 1024x768 XGA display
 256/512/1024MB DDR Memory
 40/60/80/100GB HDD
 Combo (DVD+CD-RW) DVD Dual drive
 Built-in Camera



SCHOOL WORKS

532

Transmeta® TM-8600 Processor 1.0GHz
 14.1" 1024x768 XGA display
 256MB DDR Memory
 40GB HDD
 Combo (DVD+CD-RW) DVD Dual Drive



MEDIA CENTRE

D495

Intel® Pentium® 4 processor 3.2GHz
 128MB ATI Radeon 9700 graphic
 17" 1440x900 WXGA display
 256/512/1024x2048 DDR Memory
 40/60/80/100/120GB HDD
 DVD Dual drive
 Built-in Camera

Sydney:
 Ph: (02) 8748-8888
 Fax: (02) 8748-8800

Melbourne:
 Ph: (03) 9560-7188
 Fax: (03) 9560-7288

Perth:
 Ph: (08) 9244-2888
 Fax: (08) 9244-3999

New Zealand:
 Ph: (09)570-7768
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Power on the move

Macron PW70 and ITC Metabox 730

ITC PRICE: \$4250 **DELIVERY:** \$30 - \$50 **SUPPLIER:** IT Channel 08 9486 7166 **WEB:** www.itchannel.com.au

MACRON PRICE: \$3365 **DELIVERY:** Depends on reseller **SUPPLIER:** TodayTech 02 9737 8118 **WEB:** www.todaytech.com.au

These two single-cored Pentium M notebooks from Aussie vendors Macron and IT Channel arrived in our Labs at the same time and look suspiciously identical. Both use the same Clevo chassis, which means that they have many similarities. However, both offerings sport different components, features and, above all, price.

Macron and ITC will tailor-make each PC to the buyer's request – check the website for details. The common denominator is the chassis which offers a 17in widescreen display. Our Macron model sported a glossy 1680 x 1050 display while ITC plumped for a glossy 1920 x 1250 panel.

As to which you prefer depends on how small you want your desktop icons to be. But on both, the glossy coating enriched colours in photos, films and games. Some people can't see past the increased reflections but they can ask for a matte screen instead. There was a little lag in moving areas on both panels but it wasn't particularly distracting. They're both great for multimedia.

The keys are all full sized and a number pad is squeezed on at the end. Typing proved crisp and comfortable and the trackpad mouse proved surprisingly responsive. Above the screen is a webcam offering 640 x 480 resolution – useful for Internet Messaging. The speakers on either side of the screen look like they should be powerful (and have stickers boasting of SRS Wow graphic enhancement) but sound disappointingly hollow – the high end is okay but there's no mid-range, bass or punch to music. This immediately limits the appeal of the 'instant on' controls at the front which let you play music without booting into Windows (note that you can't play DVDs in the

same way). Games and films proffered modest rather than good audio quality.

Connectivity options aren't bad. On the right is a PC Card slot, two USB 2 ports, two audio jacks, a mini FireWire port and a SD/MMC and MemoryStick card reader. At the back are two more USB 2 ports, S-Video, DVI, Serial, audio and S/PDIF jacks. There's also a TV tuner connector, though both companies offer the card as an optional extra. ITC offers a Windows MCE compatible analogue model too. On the left is the optical drive. Macron's offers 8x DVD writing, plus 4x DVD+R9 and DVD-R9 dual layer writing. While ITC's offers 8x writing, 4x DVD+R9 dual layer writing and, the killer, LightScribe.

Under the hood, both sport a 2.13GHz Pentium M 770, but ITC includes an extra gigabyte of RAM to make two. It also sports a 100GB hard disk over Macron's 80GB. In our benchmarks, though, there was little to separate them. Macron's score of 0.94 was near identical to ITC's 0.95, meaning both machines are only about five percent slower than our dual core reference desktop PC.

The difference was most marked in 3D. Macron chooses to stick with ATI because it claims NVIDIA chips drain more power. In practice, we found there was little difference – neither notebook is particularly portable with Macron lasting one hour 44 minutes under light use and one hour 32 minutes when under load. Conversely, the Metabox lasted one hour 27 minutes and one hour 20 minutes respectively – not very much in any case. You won't be regularly lugging them far anyway as 3.8kg plus a hefty 600g power brick will hurt your shoulders.

But ITC's Go 7800 GTX chip made mincemeat of our game tests – scoring 77.2fps in Half-Life 2 and 62.3fps in Far Cry. You'll be able to play even the latest games on this. Macron was far behind, with ATI's Radeon Mobility X800 XT chip managing 62.6fps in Half-Life 2 and 58.4fps in Far Cry. Both are more than playable, but the ITC offers better future proofing and lets you enjoy Shader Model 3 effects like HDR lighting in Far Cry.

Beyond that, ITC offers a one year Collect and Return warranty while TodayTech offers a slightly better one year onsite as standard. Both machines come with Windows XP Pro InterVideo WinDVD and Nero OEM – meaning there's little to separate them. Compared to the similarly priced A-Listed Acer 9504WSM, the PW70 offers more 2D and 3D oomph, but its multimedia capabilities and features aren't quite as good so the Acer holds its place. We love the superlative grunt of the



Metabox, but can't justify paying the near \$1000 premium over the PW70. In truth, people will choose whichever suits their needs the best, but have a look at our Centrino Duo group test before making your mind up.

Nick Ross

SPECIFICATIONS

ITC

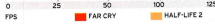
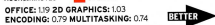
2.13GHz Pentium M 770; 2GB PC4200 DDR2 RAM; 100GB hard disk; Toshiba SD8652M dual layer LightScribe DVD writer; 256MB Nvidia GeForce Go 7800 GTX graphics; 1920 x 1250 LCD; 56K modem; Gigabit Ethernet; 802.11b/g WLAN; 4 x USB 2 ports; mini FireWire; Serial; SD/MMC and MS card reader; Type II PC Card slot; DVI and S-Video out; VGA webcam; Windows XP Professional; 1yr C&R warranty, Dimensions 397 x 293 x 44 (WDH). Weight: 3.8kg. Part Code: BM730U.

MACRON

2.13GHz Pentium M 770; 1GB PC4300 DDR2 RAM; 80GB hard disk; Pioneer DVR-K15RA dual layer DVD writer; 256MB ATI Mobility Radeon X800 XT graphics; 1680 x 1050 LCD; 56K modem; Gigabit Ethernet; 802.11a/b/g WLAN; 4 x USB 2 ports; mini FireWire; Serial; SD/MMC and MS card reader; Type II PC Card slot; DVI and S-Video out; VGA webcam; Windows XP Professional; 1yr onsite warranty, Dimensions 397 x 293 x 44 (WDH). Weight: 3.8kg. Part Code: PW70. Nero Express, InterVideo WinDVD, Acrobat Reader, Auto Mail Checker.

RESULTS

2D SPEED



LABS VERDICT

The Metabox is better but costs a grand more.

ITC

Performance ★★★★★
Features & Design ★★★★★
Value ★★★★★

OVERALL ★★★★★

MACRON

Performance ★★★★★
Features & Design ★★★★★
Value ★★★★★

OVERALL ★★★★★

Sapphire ATI Radeon X1900 XTX

PRICE: \$999 DELIVERY: \$10

SUPPLIER: www.msy.com.au WEB: www.sapphiretech.com

It's barely three months since ATI launched its new range of X1000 graphics cards, but there's already a new addition at the top of the range. What's more, the X1900 is based on an entirely new piece of silicon, codenamed R580.

The X1900 XTX has no fewer than 48 pixel pipelines, up from the 16 of the X1800. The core clock is running at 650MHz, 25MHz more than the X1800 XT's clock of 625MHz. The X1900 XT runs at 625MHz, with its RAM also running 50MHz slower.

While the frequency difference may seem small, ATI claims the X1900 does so much work per clock that actual performance drops significantly with clock speed. It's also worth remembering that the CrossFire Edition master card is an XT and so will throttle an XTX back to its speeds when in CrossFire configuration. The XTX is for single-card systems only.

Predictably, the X1900 XTX raced savagely through tests. Half-Life 2 at our standard 1280 x 1024 with 4x AA and 8x AF ran at a stomach-turning 109fps, while Far Cry sped along at 63fps. Upping the resolution to 1600 x 1200 saw the same score in Far Cry (testament to the extra pixel rendering power) and an insignificant drop to 94fps in Half-Life 2. Even Call of Duty 2, with all its settings turned to maximum, posed little problem for the X1900 XTX. At 1280 x 1024, we saw 47fps, and 38fps at 1600 x 1200. This is our toughest test, and the X1900 XTX outperforms the GeForce 7800 GTX 512 – NVIDIA's top-end hardware – by about 20 percent at both resolutions: the Asus Extreme N7800GTX 512MB scored 39fps and 32fps at 1280 x 1024 and 1600 x 1200 respectively (February 2006, page 48).

There's a high price to pay for this massive performance, though, and it's only worth it if you have a monitor capable of 1600 x 1200.

For top performance at 1280 x 1024, you could also check out the \$860 Sapphire X1800XT from www.pc.net.au, which is still capable of around 60fps in most games at 1280 x 1024.

Also beware that NVIDIA will announce its new GPU in the next month or so. While we wouldn't normally recommend holding off for a few

weeks – if so, when would you ever buy, after all – the lure of NVIDIA's next-generation silicon makes it worth waiting to see who will finish with the title of fastest card available.

Clive Webster

SPECIFICATIONS

PCI Express graphics card; ATI X1900 GPU; 650MHz core clock; 512MB 775MHz GDDR3 RAM; 256-bit memory interface; 2 x DVI-I; S-Video in and out; 8 vertex and 48 pixel pipelines. Part code: H1900XTX512DV.

LABS VERDICT

The fastest card currently available, but only 1600 x 1200 resolution hard-core gamers need to spend this much.

Performance ★★★★★
Features & Design ★★★★★
Value ★★★★★

OVERALL ★★★★★

ATI X1900 (PREVIEW)
All-in-Wonder

PRICE: Around \$750 SUPPLIER: TBC

We're used to All-in-Wonder cards appearing some months after the initial flurry of a new chipset, so it's a pleasant surprise to see that this card is based around ATI's R580 core GPU – the same chip that powers the almighty X1900 XTX (opposite). Some of the specifications have changed, though – the core clock speed is down to 500MHz from 650MHz, and the memory has been clocked down to 500MHz from 775MHz.

These are fairly large drops, but the R580 still has 48 pixel pipelines, which proved more than sufficient in our benchmarks. Call of Duty 2 scored 35fps, while Half-Life 2 and Far Cry scored 81fps and 63fps respectively at 1280 x 1024 (all with 4x AA and 8x AF on our standard Athlon 64 X2 4000+ test rig). None of these scores are as earth shattering as the X1900 XTX's, but it's safe to say you'll struggle to find a game that can bring the All-in-Wonder to its knees if you pair it with a decent CPU.

The 3D capabilities of the All-in-Wonder are only half the story, with the integrated digital hybrid TV tuner being its significant other. You can use ATI's software to control your media, but as this card is compatible with Windows XP Media Center 2005, we strongly recommend this instead.

The number of outputs will be a revelation to those stuck with D-SUB and DVI ports on current graphics cards. There's a standard DVI-I port on the back and, via a breakout box, there are also connections for scart, D-SUB, S-Video and component video, as well as another breakout box catering for component and S-Video in. Adobe Photoshop Elements 4 and Premiere Elements 2 are thrown in too.

The All-in-Wonder version of the X1900 clearly sacrifices some performance, but the wide range of video connections and premium software bundle will be sorely tempting to anyone with a camcorder or a PC in their living room. If you want a near-perfect combination of video options and gaming performance in a single card, depending on the final price, this is the one to buy.



PROSPECTS

This has the features and potential to be the performance graphics card of choice.



▲ Forty-eight pixel pipelines running at 650MHz can play any game you care for at 1600 x 1200 with full detail.

The huge increase in pixel shaders is a gamble for ATI. On the one hand, the increased transistor count leads to more chance of defects in any given chip and therefore potentially lower yields. On the other, the extra pixel pipelines provide more power for higher resolution gaming today and the ability to run the high-detail games of tomorrow. These games will include ever more pixel shader-intensive rendering techniques such as parallax occlusion mapping, which gives a better impression of rough, bumpy, non-flat surfaces than bump mapping can.

RESULTS



TEST RIG 2.4GHz Athlon 64 X2 4800+ 1GB Crucial PC3200 RAM Asus A8N-SLI Deluxe motherboard; 36GB Western Digital Raptor.

Gigabyte GA-K8N Pro-SLI

PRICE: \$160 DELIVERY: \$10

SUPPLIER: www.msy.com.au WEB: www.giga-byte.com.au



Google Pack

PRICE: Free

SUPPLIER: http://pack.google.com

WEB: www.google.com.au

SLI, while initially for hard-core gamers, has been embraced by mainstream PC manufacturers with surprising enthusiasm. It offers even the casual gamer a simple, cost-effective way to keep up with the latest game releases. By the time your first card is struggling, a complementary card will cost an affordable amount and almost double performance.

It's just one of the many tricks that the nForce4 SLI chipset has up its sleeve. There's a hardware firewall on the Gigabit Ethernet connection, and the Media Shield RAID controller that will give you performance-enhancing striped arrays or more secure mirrored disks. Gigabyte provides two Ultra ATA connectors should you still have usable parallel interface disks.

In the box are a couple of Serial ATA data cables, as well as two backplates for a total of one

RESULTS

2D SPEED



TEST RIG AMD Athlon 64 X2 4800+; 1GB Crucial PC3200 RAM; XFX GeForce 6600 GT; 36GB Western Digital Raptor hard disk.

while USB and FireWire headers are arranged along the bottom so their attendant cables can snake across the bottom of your tower. This allows the airflow in a PC built with this motherboard to remain unhampered, allowing for cooler and quieter running components.

The Asus A8N-SLI Deluxe may offer a second

RAID controller and a second (albeit unfirewalled) Gigabit Ethernet connection, but you pay extra for these luxuries. If you really want to push graphics power as far as possible, the extra spacing between the graphics slots gives you more cooling room too. However, our 7800 GTXs ran fine in the Gigabyte and that's near enough the

fastest setup you'll find. With the financial saving, and using SLI

as a frugal upgrade path, this Gigabyte board is a great foundation for a Socket 939 system.

Clive Webster

SPECIFICATIONS

Socket 939 motherboard; nVidia nForce4 SLI chipset; 4 x DDR RAM sockets; maximum 4GB memory; 2 x Ultra ATA/133 connectors; 1 x floppy connector; 4 x SATA connectors; 2 x PCI, 2 x PCI-E (1x); 2 x PCI-E (16x); Gigabit Ethernet; 4 x USB 2; parallel port; serial port; Realtek AL8850 7.1 audio; optical/S/PDIF in and out. Part code: GA-K8N Pro-SLI.

LABS VERDICT

A reasonably priced fast board, and the second 16x PCI Express slot offers a frugal graphics upgrade path.

Performance	★★★★★
Features & Design	★★★★★
Value	★★★★★

OVERALL ★★★★★



Google Pack is an idea so simple it's a wonder no-one's already thought of it. Bundle together a group of 13 programs, all designed to make your computer easier to manage, search and secure. Stuff them into an easy-to-use downloader and flog them for, well, free.

Google Pack has a number of programs most PC Authority readers will have heard of. Norton AntiVirus 2005, complete with a six-month subscription to online virus updates, Ad-Aware SE Personal and Mozilla Firefox are the headline acts.

But it's Google's own software that will really make a difference to your everyday PC use. Google Toolbar blocks pop-ups, allows spellchecking of browser textboxes and has a Google search box built in, while Picasa is a superb image-browsing utility. Google Desktop delivers a wide range of online content to your desktop, and the Google Pack Screensaver is an exceptionally simple but fun screensaver that creates montages from the pictures in any folder you choose.

Adobe Reader 7 is a handy inclusion if you've just reinstalled Windows, and Trillian – a one-size-fits-all instant messenger utility – means you won't have to use different programs if you have an IM account with more than one provider.

Best of all, both Google Earth and Google Talk are included. And, if you'd prefer not to have one of the programs suggested by Google Pack, removing them from your download package is as simple as removing a tick from the box.

Ross Burridge

LABS VERDICT

Not only does Google pack put lots of useful Google applications in the one place, but it will save you having to trawl around the Internet for third party ones too.

Performance	★★★★★
Features & Design	★★★★★
Value	★★★★★

OVERALL ★★★★★



▲ With features such as SLI, RAID and great board layout, you can't go wrong for this price.

FireWire, one FireWire 800 and eight USB 2 ports. The board itself has a typical complement of slots around the 939-pin socket. There are two 1x PCI Express, two conventional PCI, four DIMM sockets for a total of 4GB of dual-channel system memory, and the two graphics slots.

Unlike the previously A-Listed Asus A8N-SLI Deluxe, these graphics slots are separated by one 1x PCI Express slot instead of two, which makes us slightly apprehensive about fitting two dual-height graphics cards. Physically, there's enough room, but adequate cooling could prove a problem. However, our pair of single-height, standard GeForce 7800 GTX cards cooled themselves adequately during our overnight torture test (looping our intensive Far Cry benchmark).

As you'd expect, everything is in the right place for a tidy finished system. The main ATX power connector is up to the right, so that the cable can be tucked away neatly. The IDE connectors are near to the optical drive bays of an IDE case, so ribbon cables can be tucked away around there,

Two times twice the power [PREVIEW]

Gigabyte GA-8N-SLI Quad Royal

PRICE: \$369 **DELIVERY:** \$15 **Supplier:** www.pc.net.au
WEB: www.giga-byte.com.au

Dual-core CPUs and hugely parallel graphics cards stole many performance headlines in 2005. Dual-card SLI (Scalable Link Interface) went mainstream and ATI launched its response with CrossFire – two was the magic number. This year, the industry looks set to skip three and move straight on to four, with Gigabyte managing to shoehorn four PCI Express graphics slots onto this dual-core-capable motherboard.

How the Gigabyte engineers have managed this is surprisingly straightforward – on paper at least. They've combined the architectures from both AMD and Intel versions of NVIDIA's nforce4 chipset. The nforce4 SLI Intel Edition north bridge attaches to an AMD south bridge using the same HyperTransport bus that the AMD version uses to talk to an Athlon 64. So Gigabyte has paired these two apparently disparate north and south bridge chips together using this common interface. And, as both chips are SLI versions, each can provide two PCI Express graphics slots.

Before you rush out to buy a Quad Royal, jam in four 7800 GTX 512s and post the highest 3D scores ever – note that you can't actually use SLI over four slots. The first hurdle

cost, dual-output card and SLI your gaming cards over the AMD chipset-governed third and fourth slots. This is the only configuration that allows switching between an extended Desktop and SLI without having to remove cards. The BIOS won't let you send data to the first slot if the third and fourth share bandwidth for SLI, and SLI won't work if a graphics card is sitting in the first slot, regardless of whether it's actually doing anything.

We used an XFX 6600 GT for basic dual output (a much cheaper 6200 TC would work just as well) and PNY kindly loaned us two 7800 GTXs for slots three and four. When you want to switch from your massive Desktop to work in SLI, it's then a case of turning on SLI multi-GPU rendering in the graphics driver. The monitors fed by the slave SLI card will



▲ In case the name didn't give it away, there is an unprecedented four PCI Express graphics slots on this board.

'Gigabyte engineers have combined the architectures from both AMD and Intel versions of NVIDIA's nforce4 chipset.'

to overcome is for NVIDIA to actually release drivers that address more than two GPUs.

There's no technical reason why SLI can't scale up to four GPUs or more, but two high-end cards are enough to play the newest games at their best for at least a year, so it's unlikely to be a high priority for consumers or developers.

The second hurdle is that SLI bridge connectors link only two cards. This dedicated high-speed data link is the only way to shift the huge amounts of data from one GPU straight into another at acceptable speeds. The 2GB/s HyperTransport link struggles to relay the information between two cards quickly enough let alone split a render load four ways to allow each GPU to communicate with any other.

The point of this motherboard is to feed an array of monitors, and with four cards settled in the four slots it gives you eight monitors easily enough. Then there's the PCI slot that could conceivably take a legacy graphics card, squeezed between slots three and four. That's a maximum ten-screen array, gratuitous for even complex video-editing or music-creation facilities.

SLI is still viable, if you can live with keeping it to six screens. Use the second slot for a low-

then turn off as it devotes itself to the master card. You'll need to ensure that the monitor on which you play games is fed by the primary output of the master SLI card too, and that it's set as your primary monitor in Windows.

As the AMD chipset would be the only controller hub on an AMD board, it's packed with the kind of features an Intel south bridge needs. It powers the four Serial ATA connectors, with the Media Shield RAID controller giving RAID0, 1, 1+0 and 5 arrays. It also provides for the two Ultra/ATA connectors for optical drives.

There are a few eccentricities from the dual chipset arrangement though. The audio codec is fed from the AMD chip, so rather than Intel High Definition Audio you get the more standard AC97 codec. And, curiously, neither of the hardware-firewalled Gigabit Ethernet controllers in the AMD nForce 4 chipsets have been used; the dual Gigabit Ethernet is provided by separate chips from Agere and Marvel.

Elsewhere, Gigabyte is typically generous with the bundle. There's a Bluetooth dongle, as well as a FireWire/mini-FireWire/dual USB backplate, Serial ATA cables for all four ports,

and a few other odds and ends to make system construction that much easier and cheaper.

However, testing this board brought some headaches. Our 3.2GHz Pentium D 840 test CPU was forced to run at 2.8GHz, resulting in a score that was well below expectations. We also experienced reliability problems. Even an updated BIOS did nothing to solve these, so we advise holding off on purchasing this board: we'll bring you an update as soon as Gigabyte resolve the problems we faced.

Quad SLI and fastest-ever 3D scores may still be a dream even with the four graphics card slots, but the Quad Royal does make an eight-screen desktop possible, and if you use 6200 TCs, stock up on system RAM and seat a Pentium D in the LGA775 socket, you'll potentially have an excellent basis for a high-powered film-editing suite or digital photography studio.

Clive Webster

SPECIFICATIONS

LGA775 Intel motherboard; mixed NVIDIA nforce4 SLI Intel Edition and AMD Edition chipset; 4 x DDR2 RAM sockets; maximum 8GB memory; 2 x Ultra ATA/133 connectors; 4 x SATA connectors; 4 x PCI-E 16x, 2 x PCI-E 1x, 1 x PCI 2 x Gigabit Ethernet; 4 x USB 2.1 x FireWire; parallel port; Realtek ALC850 7.1 audio; optical and coaxial S/PDIF out.

PROSPECTS

If you always need extra screen space, this could be the board for you; performance problems prevent us from recommending it yet though.

Performance ★★★★★
 Features & Design ★★★★★
 Value for money ★★★★★

OVERALL

★★★★★

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Netgear RangeMax Wireless Modem Router

PRICE: \$234 DELIVERY: \$10

SUPPLIER: www.digitallyes.com.au WEB: www.netgear.com.au



Netgear and Linksys must both be wondering which one of them has spies in the other's company. This is the second time they've released similar products simultaneously – both released MIMO wireless broadband routers the last time too (*October 2005, page 90*). Like Linksys SRX200 and Netcom, the new RangeMax router (aka DG834PN) also incorporates an ADSL2+ modem, making it compatible with the very latest and fastest broadband connections.

Netgear leads you straight to the web management interface. Once you've plugged in a PC's LAN connection or connected to the RangeMax wireless, supplying your web browser with the default IP and logging in takes you to a Setup Wizard. After you've supplied your country and language, it detects the type of ADSL connection for you and enters all the settings automatically.

The RangeMax includes a decent selection of security features. You can use MAC address control to limit access, and the unit will automatically detect any stations currently connected to make their addition to the control list easier. WEP options include 64-bit and 128-bit keys, plus WPA with PSK and Radius authentication. But WPA2 support

► **The built-in ADSL2+ modem gives you full-speed access to the latest broadband services.**

isn't included, with Netgear claiming it's unnecessary on a consumer product.

The DG834PN still has blue flashing lights on top, but you can now schedule its pulsations for specific times from within the web interface, or turn them off entirely.

The built-in firewall has the usual inbound and outbound service control, which defaults to allowing all outgoing and no incoming activities. The Netgear then offers the ability to create your own custom services, which will appear in the menu when creating custom firewall rules. This will prove useful if you need to apply rules to more than one IP address. Setting up virtual servers is integrated into the same process. You can also create daily and hourly schedules for your firewall rules, and have notification of any attacks sent out to a specific email address. However, disabling port scanning and turning on Denial-of-Service attack protection are curiously found under the WAN Setup section of the

menu. Here, you can also protect the Internet connection with keyword and domain blocking, plus allow one trusted IP address full access. Support for dynamic DNS updating is provided, but only for the DynDNS.org service.

The DG834PN acquitted itself reasonably well in our performance tests. Even with a floor and a couple of rooms separating our notebook and the base station, a solid 23Mb/s throughput was maintained. Best of all, the RangeMax exhibited none of the close-proximity problems we've seen with MIMO in the past, achieving 24Mb/s when the notebook and router were adjacent. Overall performance isn't as quick as the Linksys



Linksys Wireless-G ADSL Gateway with SRX200

PRICE: \$329 DELIVERY: \$15

SUPPLIER: www.pc.net.au WEB: www.linksys.com

The original SRX router (*October 2005, page 90*) was one of the first to incorporate MIMO into 802.11g wireless networking. Now, Linksys is combining the power of MIMO with the latest broadband speed hike: ADSL2+.

While the built-in modem will work with standard ADSL, to take advantage of the extra performance you'll need an appropriate ISP connection. The new version of ADSL has surreptitiously appeared in Australia over the past few months, but you'll have to look closely to find it. ADSL2+ increases the maximum downstream bandwidth from the original ADSL's 8Mb/s to 25Mb/s, and improves upstream to over 1Mb/s.

Apart from the headline performance features, the SRX200 also offers comprehensive routing options. Wireless security is well catered for, including WPA2. The original WPA is split into Personal and Enterprise modes, with the former offering TKIP or AES encryption, and the latter adding RADIUS server support. WPA2 has no less than three options. The Personal setting includes only AES encryption. Mixed mode adds TKIP backwards compatibility, with the RADIUS-authenticated Enterprise

option making up the third. You can also restrict wireless clients by MAC address.

The more general security settings include an SPI firewall with optional proxy, Java applet, cookie and ActiveX filtering, plus anonymous Internet request blocking. VPN passthrough is available for L2TP, PPTP and IPsec VPNs, with specific tunnelling settings available for the latter. You can also set up access policies to deny Internet access at certain times of the day, or just to certain website URLs, keywords and services. The Applications and Gaming section allows single-port forwarding, with plenty of preset options, plus port ranges and triggering. You can also connect directly to the **DynDNS.org** and **TZO.com** dynamic DNS updating services, making the provision of Internet services from your LAN easy.

The Quality of Service (QoS) settings are particularly well featured. Presets are supplied for popular choices such as Skype and MSN Messenger, although the online game presets are somewhat antiquated. Best of all, you can apply specific QoS settings for voice devices by MAC address, and add custom services. Unlike the original SRX router, the ADSL Gateway claims only six

times the performance of a standard 802.11g router when you're out in the garden rather than eight times. We put this to the test by copying a collection of files to a Pentium M-based notebook equipped with a CardBus Linksys SRX 802.11g WLAN adapter. The SRX200 managed an impressive maximum of 31Mb/s. As we've come to expect from MIMO, throughput dropped to 25.6Mb/s in close proximity. Moving down a floor and a couple more rooms

► **Good speed and range, with great security options too.**

EXCLUSIVE



SRX200, but you're certainly getting an excellent boost in terms of range and speed. Netgear has yet another performance hike on the horizon too, with products claiming to reach 240Mb/s coming soon.

Netgear's new ADSL2+ wireless broadband router has plenty to commend it. It's easy to install, offers decent performance, and has a reasonable set of security features. Most people will enjoy the extra range afforded by MIMO without buying separate wireless adapters. As such, it's much cheaper than Linksys' competitor, and if you know you don't want the premium VoIP features offered by Netcomm, it's the best wireless ADSL router you can buy.

James Morris

SPECIFICATIONS

MIMO 802.11g router; ADSL2+ modem; four-port 10/100 Ethernet switch with automatic crossover sensing; ADSL filter. Part code: DG834PN.

LABS VERDICT

Easy to set up, but there's no WPA2 support and Linksys' SRX routers are faster.

Performance ★★★★★
Features & Design ★★★★★
Value ★★★★★

OVERALL ★★★★★

away, the SRX200 still achieved 28Mb/s. This wasn't quite as fast as the original SRX, but still nearly twice the transfer rate of standard 802.11g.

With ADSL2+ connections still thin on the ground, we weren't able to test other performance claims. Still, Linksys has delivered another solid router with a comprehensive set of security and configuration features. However, at almost \$100 more than the Netgear, the extra features aren't quite worth paying – especially as you've got to fork out more on SRX adaptors as well. Nonetheless, this is about as fast as you can currently go.

James Morris

SPECIFICATIONS

MIMO 802.11g router; ADSL2+ modem; four-port 10/100 Ethernet switch with automatic crossover sensing. Part code: WA654GK2.

LABS VERDICT

You pay a premium for the privilege of having MIMO and ADSL2+ in one box, but you're unlikely to find faster performance in any other integrated package.

Performance ★★★★★
Features & Design ★★★★★
Value ★★★★★

OVERALL ★★★★★

Netcomm MyNetGateway NB9W

PRICE: \$239 **DELIVERY:** \$15

SUPPLIER: www.pacstarcomputer.com.au **WEB:** www.netcomm.com.au

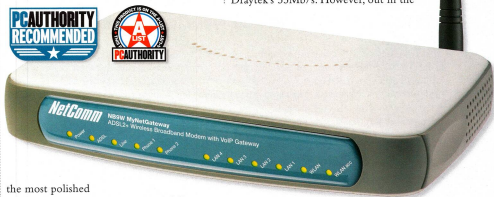
There was a time when we covered 54Kb/s 802.11g wireless routers by the dozen. But then they all reached a point where they became practically identical. Virtually all now use similar hardware and offer exactly the same features leaving minor differences in performance, configuration screens and price as the only real differentiators. In short, they're boring, and any one you buy will do a job from about \$130.

Now there's a change in the air. For a long time our A-Listed Draytek 2600VG held its title for offering something out of the norm – built in VoIP features, with two RJ-45 phone sockets you can plug in a regular DECT phone (or two) and make VoIP calls without even realising you weren't using a land line. It all came at a hefty premium though (\$279) for which you got one of

is also supplied. Other potentially useful features include the ability to turn wireless off and switch the router into an (albeit expensive) wireless bridge to boost the range of your network (though if range is your priority you should see the adjacent MIMO routers).

So far, the Draytek just edges it thanks to its ease of configuration and VPN, but Netcomm isn't finished. The NB9W works with ADSL2+. While our test Internode account doesn't support this yet, it works fine with regular connections and is a great upgrade path to have.

Putting the wireless throughput to the test, the NB9W also came out on top. You won't notice much difference in web navigation speed (or much for file transfers) within a few rooms though. Up close Netcomm managed 53Mb/s to Draytek's 55Mb/s. However, out in the



the most polished web interfaces in the business and full Virtual Private Network (VPN) terminations.

Draytek is no longer standing on its own, with Netcomm offering up a rival product. It doesn't offer full VPN functions (passthrough only) but most home users will never use this. It does, however, sport two RJ-45 connectors. The only niggle is that you have to plug in an additional RJ-45 cable (in addition to the main Internet RJ-45 cable) to get them to work. Fortunately, Netcomm supplies two, plus an Ethernet cable and an ADSL splitter.

There's no partnership with a SIP company like Draytek and Draytel, so you'll have to find a company yourself and enter the details manually. The details are clear but the unexplained jargon will scare those unfamiliar with basic networking. However, once we'd set it up with our Draytel details, we were happily making calls. The QoS feature ensured that even when there was high data throughput, our voice data packets were unimpeded and the call remained clear.

In terms of security, WEP, WPA (with RADIUS authentication for business) and WPA2 are supported. MAC address filtering

garden, the NB9W managed two minutes 24 seconds while Draytek could only browse.

Neither can hold a candle to MIMO's range, and if this is your priority, see Netgear and Linksys. However, we believe the VoIP features are worth paying for and the cheaper Netcomm, with its ADSL2+ compatibility, ousts Draytek from the A-List.

Nick Ross

SPECIFICATIONS

802.11g; ADSL2+ modem; 4 x 10/100 ports; 64/128-bit WEP; WPA; WPA 2; MAC access control; VPN passthrough; 2 x RJ-45 phone ports for VoIP. Part code: NB9W.

LABS VERDICT

It can't match the range of MIMO, but its price, VoIP features and ADSL2+ compatibility make this the most attractive ADSL router.

Performance ★★★★★
Features & Design ★★★★★
Value ★★★★★

OVERALL ★★★★★

iPod killers

Creative Vision:M and Sony Walkman NW-A3000

CREATIVE PRICE: \$470 DELIVERY: N/A SUPPLIER: Major stores WEB: <http://au.creative.com>SONY PRICE: \$415 DELIVERY: \$10 SUPPLIER: www.homezonedigital.com.au WEB: www.sony.com.au

For the last few years, Creative has played catchup to iRiver, Rio and Apple. Its players have felt as cheap as they were – only the Zen Micro seemed worth a look. Now, after years of domination, Apple looks set to get a run for its money.

But it's not only Creative that lost its hindering baggage. Last month, a Sony notebook embraced Windows MCE – the first time Sony used a non in-house media application. The revolution has spread to Sony's otherwise excellent MP3 players – gone is the infuriating reliance on the unpopular ATRAC format. This audio player supports Windows Media Audio (WMA) and Windows

Walkman simply plays music very well. The supplied headphones sound good and come with an extension cable should you find them a little short. There's a volume jog switch on the side and a useful hold button on the top. While the Connect transfer software is an improvement on previous showings, we recommend using it with the vastly superior Windows Media Player 10.

Options on the nine-icon menu are all easily navigable and offer simple and clear choices as to how your music is played and in what order – including star rating sorting, release year, and playlists. But the best thing about it is the battery life – it shuffled MP3s in our test for 30 hours

'iPod users are further warned off buying Apple's proprietary format iTunes, as they won't play on what, could very well be, your next music player.'

Media Player 10 (WMP) under the relaunched banner of 'Walkman'. The one company that can challenge Apple's iPod and iTunes dominance has finally woken up to itself. We now have two gorgeous audio players that, unlike Apple, support the popular WMA format (note that the Walkman doesn't support DRM – you can't play WMA files purchased from online stores).

The Walkman doesn't stray much further: it's a digital audio player and nothing else. The violet, lozenge-shaped device (available in silver) looks and feels very well built – if a little heavy at 182g. The display is a 37mm mono panel which bleeds into the fascia. Control is via a directional button and two other buttons, both of which pulse white when in use. With no gimmicks to fuss about, the

– double that of the iPod.

The Vision:M is a different kettle of fish. It looks almost as good as an iPod with its glossy black front (also available in green, red, blue and white) complementing its rippled matte white back, and a stunning 51mm x 40mm, 262,144 colour screen (the iPod only supports 65,000). Navigation uses a vertical trackpad, which also rocks left or right. Four other buttons operate by clicking on each corner of the lower part of the player. We found navigation round the Vision:M's myriad of features a breeze after getting used to the buttons.

Features include a recordable FM radio, voice recorder, picture viewer, Outlook task, contact and calendar synchronisation and video player. But unlike Apple's insistence on playing Apple format video, Creative supports almost every Internet-friendly format available. The high definition screen makes them look great too. In practice though, many of our test clips wouldn't play because of excessive bit rates and resolutions.

An expansion pack is required to connect charger, USB and (optional) AV out cable. In tandem with Windows Media Player 10, it worked very well. Like the Walkman, it managed very fast transfer times of under two seconds per song. It also plays WMA-DRM music bought from online stores. It played music and video for an iPod matching 17 hours and four hours respectively before the battery ran out. The only weakness we can see is the mediocre headphones.

We feared that Apple's competitors had given up, but here are two outstanding players. The Walkman is expensive but if you only want music it's the best around. The Vision:M does everything you could want from a portable media player and does it very well at a good price. Both are recommended but the Vision:M is our pick of the two. iPod users are further warned off buying



Apple's proprietary format iTunes, as they won't play on what could very well be your next music player.

NICK ROSS

SPECIFICATIONS

Creative

30GB hard disk; USB 2 interface; 2.5in 262,144 colour display, fixed Lithium ion battery; support for MP3, WMA, WMA-DRM audio; MPG, MPEG-2, MPEG-4-SP, WMV, XviD, DivX video; BMP, TIFF, GIF JPG (up to 4-megapixels) pictures; FM radio; voice recorder; AV out; carry pouch. Dimensions: 62 x 19 x 104mm. Weight 163g. Part Code: NA.

Sony

20GB hard disk; USB 2 interface; 37 x 37mm mono display; fixed Lithium ion battery; support for MP3, WMA and ATRAC audio. Dimensions: 65 x 21 x 104mm. Weight 182g. Part Code: NW-A3000.



LABS VERDICT

Two sensational players that will finally give Apple a serious run for its money.

Creative	★★★★★
Performance	★★★★★
Features & Design	★★★★★
Value	★★★★★

OVERALL ★★★★★

Sony	★★★★★
Performance	★★★★★
Features & Design	★★★★★
Value	★★★★★

OVERALL ★★★★★

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Netgear TA612V Broadband Voice Adapter

PRICE: \$125 (contact navid@digitalcityonline.com.au) **DELIVERY:** Free
SUPPLIER: www.digitalcityonline.com.au **WEB:** www.netgear.com.au



This is already shaping up to be the year when Voice over IP finally hits the mainstream. Instead of having to fiddle with irritating USB handsets attached to your PC, we're at last seeing devices that plug straight into your broadband connection, so you can hook up any phone you like – great if you've got an old DECT handset. The latest to offer integrated VoIP is Netgear with the Broadband Voice Adapter – aka the TA612V.

The Netgear is designed to work in tandem with the BBPGlobal service. Just note that with no switch build-in, you'll need to add another router or switch to share the connection between PCs.

The best thing about the TA612V is that it's designed to sit between your broadband modem and existing router, unlike most other VoIP products we've looked at so far. So if you already have a fully featured wireless router, you can still use it and enjoy all the benefits of cheap telephony over the Internet.

The instruction pamphlet explains how to hook up the TA612V to a single PC or a router. You'll have to diverge slightly from the suggested system if you need to use MAC address authentication with a cable modem, plugging the latter in last after you've set up spoofing on the TA612V. For



▲ With great quality calls, a comprehensive feature set and good looks, Voice over IP has never been so attractive.

an Ethernet ADSL modem, PPPoE authentication is supported. The rear of the device incorporates just four ports: a WAN port for your broadband modem, a LAN port for downstream devices and two RJ-11 phone connections. However, despite its supposed position between the modem and the router, we found it worked fine when the WAN port plugged directly into one of our ADSL modem router's LAN ports.

Once the router itself has been set up, your next step is to register for a BBPGlobal account. Netgear has its own special area on the BBPGlobal website (www.bbpglobal.com), so when you've logged into your new account, you simply need to enter the MAC address from the bottom of the TA612V to get things configured. The Online

Wizard sets everything up for you, so the router will pick up the SIP settings automatically next time it's rebooted. The process also credits you with 500 minutes of local calls – worth \$25.

Once it's up and running, there's little to distinguish the quality of the TA612V's phone calls from a standard landline. The router itself has a fairly comprehensive set of features, including Quality of Service bandwidth allocation. However, this isn't enabled by default and there's insufficient online help for the novice to set it up. The stateful packet inspection firewall incorporates website blocking by keyword and service restriction, plus the usual port forwarding, triggering and DMZ capabilities. It can even send error notifications via email.

Linksys CIT200

PRICE: \$179 **DELIVERY:** \$15
SUPPLIER: www.pc.net.au **WEB:** www.linksys.com

For those who prefer a more traditional interface to a headset for VoIP, Linksys' CIT200 could provide the answer.

The phone itself looks just like a standard DECT phone, and that's exactly what it is. The handset communicates with the base station using standard DECT and GAP (general access profile). However, the base station is a USB device so, annoyingly, you need a PC to use this system. It doesn't provide Internet telephony for your existing wireless network, unlike ZyXEL's Prestige 2000W. Instead, the Linksys works via Skype – the service that's done most to promote the concept of Internet telephony.

The Skype software is included in the setup CD (though you should note that it will need to be upgraded to version two imminently – see over), but you can use an existing installation if you want to. Once you've set up Skype and the CIT200 software, you will need to register the latter with Skype to access your Internet phone account.

After the requisite 14-hour initial charge cycle, you can use your Skype account through

► The CIT200 offers great sound quality and 10 localised numbers around the world.

the CIT200 without further hassle. All of your current Skype contacts appear on the phone – just hit the Skype button. This includes any numbers you've added with SkypeOut – Skype's bridging service to regular landlines.

A voucher is included in the box for 60 minutes of SkypeOut. After you've used that, it's 1.7 Euro cents a minute (about 2.7 cents) to most of Europe, North America, China, Australia and New Zealand. Phoning other countries is still reasonable though. For example, most Indian area codes are only 12.5 Euro cents a minute, which works out better than many other SIP-based VoIP services.

You can also make use of the SkypeIn service, which is now available as a beta in Australia, and gives you a real number that anyone can telephone. You can actually have up to 10 phone numbers localised in several different countries, allowing distant relatives and friends to always call you at a local rate. So you can use Skype for all of your phone needs.

Sound quality is extremely good and it offers a distinct improvement on a cheap PC microphone.





It's not perfect, but this time Netgear gets the balance just about right. But BBPGlobal isn't the best VoIP service to partner with – bonding a proper landline number to the router costs \$50 per year and your choice of local numbers are few. Other services like DrayTel (www.draytel.org) offer free numbers localised to almost anywhere in the world, allowing relatives in, say, the UK to call you at a local call rate.

That said, choosing this service details is a simple affair and because of this, the TA612V makes a great way to bring VoIP cost savings to your small office or home.

James Morris

SPECIFICATIONS

Ethernet WAN VoIP router; 10/100 Ethernet WAN port; 1 x 10/100 Ethernet LAN port; 2 x RJ-11 phone port; 2 x BT-RJ-11 adaptor; 500 free minutes with BBPGlobal VoIP service. Part code: TA612V.

LABS VERDICT

The TA612V should fit seamlessly into an existing broadband setup. It's the ideal VoIP addition for a small business or home network.

Performance	★★★★★
Features & Design	★★★★★
Value	★★★★★

OVERALL ★★★★★

The Linksys CIT200 is a lot more expensive than a Plantronics headset, and a standalone DECT phone for a broadband adaptor such as Netgear's (see above) would cost less than half the price. However, if you already use Skype a lot to converse with friends and relatives abroad, the CIT200 could be just what you need to get over the discomfort of being tied to your PC.

Considering just how competitive SkypeOut rates are, you could save quite a bit of money on your international calls as well. We just wish the CIT200 was a WLAN device, because then you could cut the PC out of the picture entirely.

James Morris

SPECIFICATIONS

DECT cordless phone; USB DECT receiver; Skype software; 60 minutes SkypeOut usage included.

LABS VERDICT

There are much cheaper ways to use Skype, but they're not as convenient as the CIT200, and SkypeOut's competitive rates make this a viable alternative to a broadband phone adaptor.

Performance	★★★★★
Features & Design	★★★★★
Value	★★★★★

OVERALL ★★★★★

Skype 2 Beta

PRICE: Free download **WEB:** www.skype.com

Skype is primarily responsible for bringing VoIP to the masses.

But being first to market doesn't always give you supremacy, and Skype has accumulated numerous competitors since its launching. Although the company now has eBay's financial muscle behind it, it has Google Talk to contend with, Yahoo! Messenger, plus the increasing interest in SIP, including Gizmo, which operates with SIP and Jabber – the open IM standard.

So Skype is fighting back with version 2 of its software, and its secret weapon will be video. This is hardly new to the Web. CU-SeeMe existed long before broadband made live video viable, way back in 1994, and there have been numerous successors, including NetMeeting and even Amstrad's E3 em@iler. But Skype has the kind of momentum that no predecessor could even dream of. If any company can take video calling to the mainstream, Skype can.

The video capabilities work with most webcams, although you'll need Windows XP to use them. On startup, the Skype software detects your webcam and gives you the option to test it. You can also configure settings for how Skype handles your video connection, and your webcam's own settings. Although your recipients need Skype 2 to receive video, they have full control over whether to use visuals for any particular call.

We successfully placed calls to the Netherlands and the US. The video was somewhat jerky, despite our fast broadband connection, but certainly a leap over the modem-based days of yore. The application crashed regularly and wouldn't work at all on one of our test PCs. That's to be expected on a beta version, but if Skype wants to take the mainstream, it'll need to be rock-solid.

Video isn't the only enhancement with Skype 2. The new application also allegedly improves audio quality, although we found this too subtle to discern. It's also now possible to group contact lists under different headings, which is far from earth-shattering. Most IM apps have had this ability for years. You can now add a 'mood' information to your profile, which will appear next to your name in other people's contact lists to tell them how you're feeling. Again, this rather reminiscent of the way people already use their MSN names. More useful is the local time display, so you don't accidentally call your contacts in the middle of the night.

Another new feature is the ability to put buttons on your web page that display your current Skype status. However, we only found buttons available that allowed you to place calls and check the profile, not dynamic ones.

Current Skype users won't find the



▲ The video sits within the Skype interface by default, but you can also run it in a separate window or even full-screen.

new version particularly daunting to come to grips with. The interface has scarcely changed. If it weren't for the video calling, this would feel like a dot release. But now that broadband is widespread, and the faster second generation on its way, the time does seem ripe for video calling. The biggest challenge for Skype 2 is getting people to actually use the video features. Considering how many people use Skype for free phone calls to distant relatives, there's a good chance the visual additions will be welcomed. Considering the software is still free, it'd be a waste not to give it a try.

James Morris

REQUIREMENTS

Windows 2000/XP (Windows XP required for video calling); duplex sound card with headset; broadband internet connection.

LABS VERDICT

Video calling is by far the biggest feature. You won't want to bother with it for every call, but it will be a godsend for keeping in touch with distant relatives.

Ease of use	★★★★★
Features & Design	★★★★★
Value	★★★★★

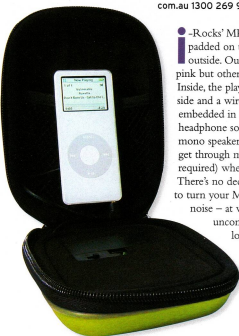
OVERALL ★★★★★

Product brief

Brief reviews of new products, plus updates on items already featured.

i-Rocks NXT MP3 Mono Audio Case

PRICE: \$45 **DELIVERY:** Depends on reseller **SUPPLIER:** www.anyware.com.au 1300 269 927 **INTERNET:** www.i-rocks.com



i-Rocks' MP3 player carrying case is well padded on the inside and very solid on the outside. Our test sample came in shocking pink but other garish colours are available. Inside, the player tucks behind netting on one side and a wire emanating from the speaker, embedded in the other side, plugs into the headphone socket. There's a switch to turn the mono speaker on and off – so you'll probably get through many AAA batteries (two are required) when you accidentally leave it on. There's no dedicated volume dial – you'll have to turn your MP3 player up fully to make a noise – at which point the case vibrates uncomfortably. Sound is surprisingly loud, if a little muffled and distinctly mono, but if you want to share music with people around you it does a reasonably-priced job.

OVERALL



TDK Tremor Xa60

PRICE: \$97 **DELIVERY:** \$15
SUPPLIER: www.pc.net.au **INTERNET:** www.tdk.com.au



We didn't think that speakers this small could produce decent sound, but we're happily wrong. The punch delivered from these 60 Watt 2.1 speakers is impressive. Cranking them up with the sub's main volume dial gives a full dynamic range that's loud, punchy and yet manages to leave vocals in both music and movies distinct. The sub provides ample bass, though turning the treble/bass knob seemed only to cause distortion. Treble rich music sounded great, so too were heavy bass sounds and games. When using them as our TV's main speakers, the wide dispersion of the thin satellites filled the room. They're the best, small-but-powerful, speaker system we've seen.

OVERALL ★★★★★



Logitech Z-5450 wireless 5.1 speakers

PRICE: \$595 **DELIVERY:** From \$20
SUPPLIER: www.pc.net.au **INTERNET:** www.logitech.com

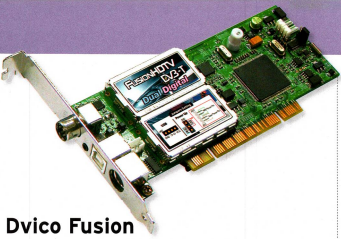
We detest IT's spider-web-wire-syndrome and speakers are the worst offenders with their several kilometres of wiring. So the thought of wireless alternatives is intriguing. Logitech's 350 Watt Z-5450 5.1 set comprise of two 38W front and two 41W rear satellites, a 42W centre and a 116W sub. The sub is large but delivers a loud growling sense of menace to movies and games and also thumping bass to music. The three front satellites attach to it via wire, as does a front control centre. This sports five buttons for input selection, effects and levels, an adjustment dial and a clear two-line backlit mono display. A remote control mirrors its functions.

The two rear speakers are the wireless ones and connecting them is simply a case of pressing buttons while in the control centre's two-minute search mode. However, both require power points. This immediately limits their placement up high and your choice of floor points is limited by plug location rather than best audio position. Note also that our speakers could not be detected when placed in an adjacent room.

Audio performance is impressive with all music, games and movies sounding great for all but picky audiophiles. Reports of interference from Wi-Fi networks could not be confirmed – there was no interference from our local WLANs.

The main gripe is the price – the wired variants cost \$300 less. But if you're desperate to lose two lengths of living room wire, this is a good bet.

OVERALL ★★★★★



Dvico Fusion HDTV DVB-T Dual Digital Tuner

PRICE: \$189 DELIVERY: \$15

SUPPLIER: www.pc.net.au INTERNET: www.dvico.com

We consider tuners to be much of a muchness but Dvico's new offering really caught our eye. It's a small PCI card with two tuners and just one antennae connector. It even comes with a low profile backplate for small cases and is Windows Media Center Edition (MCE) compatible. It seems ideal for media centre builders as it takes up little space in the case, which requires good air flow. The second tuner runs off the USB bus and connects either internally or externally – a smart idea that could save valuable USB ports on a small form factor PC. Setting it up is tricky though – experience is recommended before tackling the highly-technical instructions.

The bundled software offers powerful features but is clunky to use. Still, it picked up all local channels in Sydney. However, when using it with MCE, it only managed to pick up one TV station when our Hauppauge tuner picked up over 50. As such, it was impossible to test its simultaneous watching and recording performance. Doing so with the included software proved difficult as you can't switch between tuners when recording without using picture in picture. A programmable Media Centre-compatible remote and infrared receiver are also included along with a cable allowing S-Video and composite input. On paper it's a great product for media centre builders but its refusal to acknowledge under-strength TV signals in MCE costs it an award.

OVERALL



iKids SF Alert

[PREVIEW]

PRICE: \$299 without contract SUPPLIER: www.mobiles2go.com

This month's head-turning product was the iKids GPS phone.

It's an 8cm-long, pre-teen phone (for ages four and above) which can only dial four numbers via dedicated buttons. It can receive SMS messages without sending them. Most novel of all, it has a GPS receiver which lets you track your child or alert you when they move out of a designated safety zone. We'll be trialling it for the next issue to establish whether on-paper claims hold up. For instance, do we really want kids walking around with electronic tags in plain view?

Will it prove distracting in lessons and will it cause issues in the playground? GPS is a pernickety thing and keeping it in a pocket could lose a signal – though the iKids system tracks previously recorded positions.

But it could also soothe peace-of-mind and function as an essential safety tool for young kids. Our test toddlers will let us know next month.



Unwired Wireless Card and Vodafone Mobile Connect 3G/GPRS data card

PRICE: Unwired \$299 Vodafone \$357 SUPPLIER: Unwired - www.unwired.com.au Vodafone - www.techoni.com.au

We've been trialling two wireless broadband notebook cards this month:

Vodafone's works using both 3G and GPRS while Unwired uses its WiMAX-like system. Unwired's card offers potential bandwidth of 750Kb/s as opposed to 385KB/s using Vodafone's 3G and 170KB/s GPRS.

Vodafone's 3G coverage extends to Sydney, Melbourne, Canberra plus major airports, while GPRS is naturally available with most global phone networks – suiting it to global travel. You can choose which connection to use but mostly we let the application decide which was strongest.

In practice, performance was good around Sydney, though GPRS transfers displayed more lag – not good for applications like Skype. We tried streaming a radio station while heading out to

the Hunter Valley, but it struggled once we hit city limits. After that, with no 3G, we struggled to get any website connection via GPRS. However, if you're staying within cities it will suit most people. The Unwired card constantly offered faster download speeds though responsiveness became an issue when the signal was weak – meaning Skype-like usage is variable. It's only available in metropolitan Sydney at present but a Melbourne network is planned. It struggled to maintain a constant connection when on the move compared to Vodafone's card when using it in a vehicle.

The purchase price is high for both. With Unwired though, you have a choice of buying the 'Rabbit' modem instead – it's heavier but works with any computer and costs only \$189. Neither really suit consumer usage though as tariffs can get high. With Vodafone, 100MB per month costs \$30, \$50 for 300MB or 0.2 cents per



KB

thereafter, with uncapped usage costing

\$100 per month. Unwired plans work from \$50 (400MB) to \$110 (12GB) with excess usage being throttled back to dialup speeds.

All in all, both are useful for people who want to access more than occasional data while on the move, but geographical limitations, pricing and usage caps limit wider appeal. If you're staying in Sydney then go Unwired, if you're moving elsewhere, take Vodafone.

OVERALL



The mighty stumbles

Symantec Norton SystemWorks 2006

PRICE: \$120 UPGRADE: \$73

SUPPLIER: Symantec via website WEB: www.symantec.com.au

Unlike last year's release, there isn't much that's new in this latest release of SystemWorks – or at least new and worth getting excited about.

The one notable exception is that GoBack now automatically installs itself so as to provide out-of-the-box continuous rollback coverage. It's better than the XP System Restore thanks to the Safe Try mode, which creates a temporary test environment. If you do potentially disruptive things like installing new software or P2P file-sharing and it all goes pear shaped, your system at least stays safe.

Everything else is in the fine detail. The system cleanup component now automatically imports your browser bookmarks and leaves any cookies that match the URLs. It supports Firefox, which is good, Netscape, which is a touch academic, but not Opera, which is scandalous. Cleanup has been tweaked to include remove lists for Microsoft Office files,

impact Symantec applications are having. Otherwise, it's business as usual for Norton.

The one-button cleanup scans the Registry for problems, looking for program-integrity anomalies, checking that your virus definition updates are up to date, revealing broken shortcuts and hunting down redundant files. It's relatively quick and logs everything it finds and what it does to resolve the problem. The Smith Micro CheckIt Diagnostics application does a superb job of both diagnosing hardware problems and optimising system memory. Bizarrely, it needs to be installed separately from the rest of SystemWorks, although once in place, it is accessed from the central control console. The old Norton mainstays are still here: Disk Doctor, System Doctor, WinDoctor, UnErase and SpeedDisk. Between them, and despite being rather long in the tooth now, they still do a top-notch job of monitoring for ongoing problems, repairing

'It's not that SystemWorks is bad value as such, but it's no longer a suite of top-class components.'

Windows Search Assistant, Google toolbar searches and Windows Media Player. Norton AntiVirus now includes protection against 'potentially unwanted programs', or spyware as the rest of the world calls it. The combined anti-virus/anti-spyware scanning routine proved effective in our tests, but unacceptably slow. It also takes your system resources along for the ride. In fact, you can use the last of the new features, the Task Manager replacement of Process Viewer 2, to see just how much of an

most that are thrown their way without incident, securely deleting files and defragmenting drives.

But the hit on system performance severely clouds the positives. Booting up becomes a test of patience. It took 51 seconds to get to a fully usable Windows Desktop with everything loaded prior to installing SystemWorks, and a whole three minutes longer post install. If that wasn't bad enough, shutting down is even slower. Plus, just to rub salt into the wound, SystemWorks 2006 gives your system resources a pounding in between too. It's certainly a retrograde step from the 2005 version, which was a lot more resource-friendly.

With the exception of GoBack, none of the component parts are best of breed any more. If there were better integration, with consistent navigation and less impact upon system resources, we might forgive it. If the installation didn't force us to remove our existing Norton AntiVirus 2006 (which came as part of Norton Internet



▲ An advert instead of integrated central management is typical of the interface mistakes SystemWorks makes.

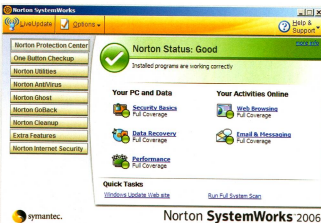
Security), only to replace it with the same application that then has to be instantly updated anyway, we'd be happier. If there were only one version of SystemWorks 2006 instead of a bonus edition adding Norton Internet Security 2006 (March 2006, page 98) for an extra \$16, we wouldn't feel so cheated.

It's not that SystemWorks 2006 is bad value as such, but it's no longer a suite of top-class components. Add to this the system-resource suck, that system start and shutdown overhead, plus the skin-deep interface integration, and Norton SystemWorks 2006 feels more like a backward step than an essential upgrade – and certainly not a must-have for the first-time Norton buyer.

If you've already invested in Norton Internet Security, SystemWorks is the obvious partner, but we'd still look elsewhere for system utilities.

Keeping the anti-virus component out of the argument, as there are perfectly good AV applications available for nothing (e.g., AVG), Sysweak Advanced System Optimizer (www.sysweak.com) does a lot more (adding startup management, file encryption, drive/partition erasure, Registry and Internet optimisation) for a lot less – just US\$40.

Davey Winder



▲ Only expect to be given the green thumbs up if you install the Symantec Norton product line.

REQUIREMENTS

Windows 2000/XP.

LABS VERDICT

No longer offering best of breed components, SystemWorks 2006 is further disadvantaged by its system-sapping resource usage.

Ease of use ★★★★★
Features & Design ★★★★★
Value ★★★★★

OVERALL ★★★★★

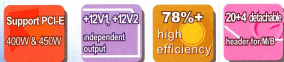


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Protect your PC from itself and yourself

Acronis Disk Director Suite 10

PRICE: \$70 UPGRADE: \$42

SUPPLIER: Acronis via website WEB: www.acronis.com



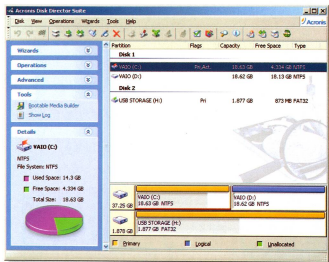
A properly partitioned drive will protect your data by keeping it separate from applications and the OS. After all, installing an OS is relatively easy, as are applications, but corrupt the drive that holds your data and, quite frankly, that's your lot.

Disk Director Suite 10 is comprised of four integrated applications: Partition Expert enables you to split, merge, move, copy or resize partitions on-the-fly without losing data (something that Windows XP can't do); OS Selector is a multibooting OS loader that can handle in excess of 100 operating systems and allows you to boot into them from any partition; Recovery Expert provides a quick and simple means to restore lost or deleted partitions; and Disk Editor, which acts as both a drive repair tool for restoring boot records as well as an advanced hexadecimal editor.

Acronis understands how to safely present advanced technical operations at OS level in such a way that anyone with a basic understanding of computers can perform them. You can choose between automatic and manual mode, with the UI changing from a simple wizard-led approach to perform the most common partitioning operations with the former, to full operational control over every possible task. The ability to toggle between modes according

to the inclusion of an advanced disk drive editor that's only intended for those who understand the information storage structure of hard drives. You'll be able to work in the universal hexadecimal mode of data representation, and in special modes for editing Partition tables, FAT 16/32 and NTFS boot sectors, and folders. Even at its simplest level, the ability to back up and restore a Master Boot Record (MBR) is always going to be a potential lifesaver.

New to version 10 of the suite is the ability to split one partition into two while leaving your data intact, or merge two into one. Amazingly, you can do this without harming your data even if the file systems on the partitions are different. Also new is the Windows Explorer-like interface that enables



▲ Acronis succeeds in making disk management straightforward and delivering ease of use without sacrificing flexibility or power.

'Acronis understands how to present advanced technical operations at OS level so that anyone with a basic understanding can perform them.'

to the task at hand, while retaining a consistent look and feel throughout, demonstrates a real understanding of what a good UI should be.

That's not to say this is a product for beginners alone. There's no reason to eschew ease of use for pure machismo, which is catered for by

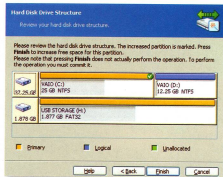
you to quickly view partition data before actually doing any partitioning action. Plus, there is also the ability to boot from an additional hard drive by selecting the drive you'd like to boot from. As soon as any bootable device, including removable media such as a CD/DVD, is inserted, the OS Selector kicks into action detecting it and displaying it as a boot option. Also added in the suite is the automatic OS detection, which is a lifesaver if your OS becomes unbootable because of damage to the MBR, for example.

Acronis prides itself on offering the widest of OS support, and a credit that it's still developing programs that support Windows 98 users. So it should come as no surprise to see the depth of file system support on offer. As well as the usual FAT16/FAT32 for DOS, OS/2 and Windows 98/ME/NT/2000/XP and NTFS for NT/2000/XP/2003, there are also Ext2 and Ext3 Linux systems, ReiserFS (often used on data servers) and even LinuxSwap – used for Linux swap partitions. At the moment, you can

convert only FAT16 to FAT32 and back, and the same for ext2 and ext3, but future upgrades to Disk Director promise to include more file conversion options. We tested it with multiple operating systems, successfully converting various file systems, and performing effectively and safely throughout, including when working within a RAID environment.

The only problem we ran into was when attempting to resize a partition on a system with Norton GoBack running. This, quite logically, had to be disabled to prevent it from stopping Acronis changing the partition table.

You'll gladly spend \$90 on an Internet security suite because it protects your data and system integrity, but without a cast-iron data-backup and disk-management strategy you're wandering into proverbial bolting horse territory. Acronis Disk Director Suite 10 is highly recommended at \$70. If you value your data and your hair, buy it.



▲ For commonplace partitioning operations, the 'automatic' mode adopts a wizard-led approach.

REQUIREMENTS

Windows 98 SE onwards.

LABS VERDICT

Disk Director Suite 10 is quite simply the only comprehensive disk-management tool worth having. Both its features and usability are perfectly pitched.

Ease of use ★★★★★
Features & Design ★★★★★
Value ★★★★★

OVERALL ★★★★★

Download

Davey Winder reviews five essential privacy tools.

Webroot Window Washer 6

PRICE: US\$25

DOWNLOAD FROM: www.webroot.com

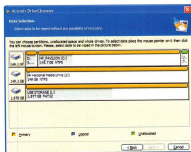
DOWNLOAD SIZE: 3.1MB



BEST OF THE BUNCH

We were fans of Window Washer 5, but this latest release gets even better. The professional yet understated new interface is testament to Webroot listening to what users want. You now get the ability to clean traces of the apps you use without damaging them, using over 450 'custom wash' items. If you want to securely erase a hard disk so that no private data is sold along with an old PC, a new System Eraser tool comes to your aid (although not on a per-partition basis like Acronis). There's even native support for Firefox, though Opera is strangely absent from the supported browser list. Good cookie management, secure file erasure and 'bleaching' using DoD, NSA or Guttman algorithms wrap up the feature set. Used alongside Webroot Spy Sweeper, Window Washer provides an almost perfect privacy package.

OVERALL



Acronis Privacy Expert Suite 8

PRICE: \$42

DOWNLOAD FROM: www.acronis.com

DOWNLOAD SIZE: 29.9MB

Acronis has wrapped several apps around a central management console to produce a polished privacy suite. The star is DriveCleaner, which securely wipes a single partition or a whole drive, rebooting into a Linux OS through the bootable CD or floppies it creates. The Internet clean-up tools are efficient, including options to wipe selected contacts and emails. But with no database of custom washes, individual app cleansing is not as confident and quick as Window Washer 6 and the spyware scanner is no match for Spy Sweeper, so Webroot has it trumped.

OVERALL



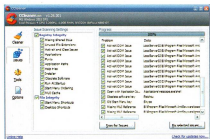
Crap Cleaner

PRICE: Free DOWNLOAD FROM: www.ccleaner.com

DOWNLOAD SIZE: 529KB

This charmingly named utility is no match for the commercial privacy suites, but then again it's completely free of charge – and it's got a very small footprint. Making hardly any impact on system resources, Crap Cleaner concentrates on clearing click-trail traces from your browser (including Firefox and Opera), the OS (Windows log files, recent documents and old XP pre-fetch data) and apps, including Office XP, Google Toolbar and Adobe Acrobat. We were impressed with the attention to detail. Cleansing of both menu order and tray notification caches is supported, and the Registry gets a thorough spring cleaning. This is a quick and slick utility with a mature interface and, if you can do without the bells and whistles, Crap Cleaner has to be the best privacy cleansing tool money can't buy.

OVERALL



PC Tools Privacy Guardian 4

PRICE: US\$23

DOWNLOAD FROM: www.pctools.com

DOWNLOAD SIZE: 3.1MB

Despite having almost as many cleansing options as Window Washer, Privacy Guardian looks better than it performs. IE, Netscape and Opera browsers are supported and, while Firefox is meant to be, it wasn't detected on the two setups we tested. Its list of third-party apps rivals the Webroot product's, and in use we found it almost as fast. However, there's no option to configure the secure deletion algorithm, scheduling is limited to a '15-min/daily/weekly' style selection, and you don't get tools for securely erasing an entire drive. This leaves Privacy Guardian looking overpriced and under-featured.

OVERALL



DESlock+ 3.2

PRICE: Free

DOWNLOAD FROM: www.deslock.com

DOWNLOAD SIZE: 9.7MB

While there's a lot to be said for tools that check your online and system footprints to ensure you don't leave private data accessible to someone else, there is another way to approach the privacy issue: encryption. And it doesn't come any better than DESlock+ for Windows 2000 and XP users. Encryption is totally transparent and can be applied to email messages, files and folders using software keys. These can be stored on your PC or a CD, or even an external USB device. With four encryption key slots, there's scope to securely share email with a select few, and another for your personal files. If that isn't enough, there's secure file deletion too. There's a nag screen that kicks in after 60 days, but for occasional use it's a price worth paying.

OVERALL



Lexmark C522n

PRICE: \$939 **DELIVERY:** From \$15

SUPPLIER: www.i-tech.com.au **WEB:** www.lexmark.com.au



A colour laser for a small workgroup might seem extravagant, but not at this price. Mono pages whizz out, colour pages are rich and vibrant and the C522n is even fairly cheap to run. Even against one of the best colour lasers we've seen, the \$1880 Kyocera Mita FS-5020N (see A-List), the Lexmark holds its own magnificently.

Quality is among the best we've seen from a colour laser, regardless of price. While text is as tight as we'd expect, it's the vibrancy of the colour images that most impress. Our Excel test has some garishly coloured graphs and tables, and they looked as striking on the page as onscreen. We then forced some newsletters under the Lexmark, replete with photos, high-impact graphics and everything else that colour lasers usually hate. But this is no typical colour laser; the newsletters looked fantastic, with plenty of detail in photos and vibrant colours throughout.

The C522n doesn't skimp on speed either. In almost every test – be it five percent mono coverage letters or full-page graphs – the C522n barely dipped below its quoted 19ppm speed rating. It only dropped speed while

► Cheap to buy, the C522n is also fast, and produces superbly rich colour pages.

collating five copies of a complex text and graphics document, but still managed 15ppm to the Kyocera's 5ppm.

For those on a tight budget, the price is appealing, and Lexmark backs this up with the ability to control who can print in colour within your workgroup and modestly-priced consumables – the high-yield cartridges aren't available in Australia. The Lexmark mono standard-yield cartridges last 4000 pages giving a cost per page of 4.5c. Each of the colour cartridges last 3000 pages and cost \$202 each giving a cost of 20.2c per page. As you might expect from a unit that costs just under \$1000, the fuser and image drum aren't replaceable. But then to replace the same kit on the Kyocera costs more than this whole printer.

However, the photoconductors can be replaced in the Lexmark – all four costing \$216. Lexmark quotes their lifetime as 20,000 passes. Ease of use is impressive, too. There's



a four-line display and simple navigation panel. It isn't merely a gimmick, as the screen provides feedback relating to the current job; useful for not accidentally cancelling other people's work. Also useful is the 250-sheet input tray and the sturdy output paper holder. Although both stick out from the back of the unit, it still doesn't take up a huge amount of desk space, with a footprint of 420 x 430mm. While the Kyocera is still the top option when it comes to running costs,

Lexmark T642n

PRICE: \$1739 **DELIVERY:** From \$45

SUPPLIER: www.computeralliance.com.au **WEB:** www.lexmark.com.au



As far as workgroup printers go, you can't do better than to a Lexmark's HP 4350dn, with its print speed of up to 68ppm, a built-in duplex and heavy-duty build quality. However, the \$3159 price tag is difficult to swallow for smaller offices and workgroups. Enter the T640n, which offers slightly slower performance and fewer paper-handling features, but for well over a grand less.

There's no duplexer as standard and the default paper tray handles 500 sheets rather than the HP's 1100. There's a slightly flimsy feel to the multipurpose tray for envelopes too, but with a bit of care it should stand up to most environments.

We were impressed with the speed of the T640n. Our five percent coverage mono document printed in one minute and 10 seconds, pleasingly near to Lexmark's claim of 43ppm. A complicated 12-page Excel document printed at a rate of 40ppm, and the T642n's 64MB of RAM and 457MHz processor helped the unit through our 24-page DTP test at 41ppm. Our tricky four-page PDF slowed performance down to 34ppm, but it's still respectable for a machine that's intended to serve around a dozen users.

Text quality was predictably good, but we were even more impressed with the dithering control. Darker greys were printed as solid blocks, and while lighter patches occasionally suffered from obvious dithering, it didn't distract from darker text printed on top. Even images, normally a serious stumbling block for mono lasers, printed well. A good range of greyscales was helped by a banding-free print engine. Our only complaint is the amount of toner on the page, giving a noticeable texture to some of our darker images.

The T642n does have a few tricks up its sleeve. The USB port on the front is compatible with flash drives, and can read and print most PDF, JPEG or TIFF files it finds on them. There's no preview screen, but it's a handy feature.

The network features on the T640n aren't the most powerful we've seen, but for smaller roll-outs it will do the job. You can install the printer software on remote systems, which saves distributing discs or having to make a tour of all the systems in a workgroup. We had the T642n connected to the network and printing in less than five minutes.



Admittedly, the T642n won't win any beauty pageants, but in use it isn't obtrusively loud, and doesn't produce a noticeable amount of ozone, making it a good choice for desktop use. The toner and image drum are in the same unit, making replacing the two most-frequently changed consumables straightforward. A 21,000-page toner costs a hefty \$669 RRP, but works out at just 3.19c

the low unit cost of the C522n compensates nicely. It's difficult to differentiate between the two when it comes to quality, with both giving superbly rich and vibrant results. However, despite its low cost, the Lexmark is tangibly faster. These factors combine to make the C522n a superb buy. If you're looking for a workgroup printer, place your order for the C522n now.

Clive Webster

SPECIFICATIONS

1200 x 1200dpi A4 colour laser; 19ppm mono, 19ppm colour quoted print speed; 312.5MHz processor; 128MB RAM (maximum 640MB); USB, parallel and 10/100 Ethernet ports; 250-sheet input tray; drivers for Windows 98 onwards. Dimensions: 418 x 432 x 486mm (WDH). Weight: 25kg. Part code: 0022H0061.

RUNNING COSTS:

Mono cartridge (4000 pages), \$178; each colour cartridge (3000 pages), \$202. Overall cost per A4 page: mono, 4.5c (standard); colour, 20.2c.

LABS VERDICT

Pages are churned out quickly, and the quality isn't lacking either. It's incredible that this printer costs as little as it does.

Performance ★★★★★
Features & Design ★★★★★
Value ★★★★★

OVERALL ★★★★★

per page (a smaller, 6000-page toner costs \$331, and works out at 5.52c per page).

The T642n is a good printer at a good price, and we're happy to recommend it for small and medium-sized workgroups. However, larger groups should be looking at the likes of the HP 4350dn, which is much faster and delivers significantly better paper handling.

Dave Stephenson

SPECIFICATIONS

1200 x 1200dpi A4 mono laser; 43ppm quoted print speed; 457MHz processor; 64MB RAM (maximum 516MB); USB, parallel and 10/100 Ethernet ports; 500-sheet input tray; 100-sheet multipurpose tray; drivers for Windows 98 onwards. Dimensions: 436 x 523 x 406mm (WDH). Weight: 23kg. Part code: 0020G0201.

RUNNING COSTS:

High-capacity mono cartridge (21,000 pages), \$669. Cost per A4 page: 3.19c.

LABS VERDICT

An efficient, cheap-to-run and quiet networked laser printer that's ideal for medium-sized workgroups.

Performance ★★★★★
Features & Design ★★★★★
Value ★★★★★

OVERALL ★★★★★

FalconStor iSCSI Storage Server for Windows 2 **BACKUP SUPERGUIDE**

PRICE: \$4995 **SUPPLIER:** FalconStor 02 9955 4899

UPGRADE: Upgrade is included in the annual maintenance at 20 percent of the price

FalconStor's iSCSI Storage Server has always been a popular choice with NAS appliance vendors that want to add IP SAN capabilities to their boxes. Up until now, the software has only supported Windows Storage Server 2003 (WSS 2003) powered appliances, but this latest version makes the jump to Windows Server 2003 as well, allowing standard servers to deliver iSCSI target support.

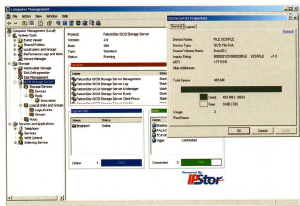
Essentially, iSCSI Storage Server for Windows 2 (iSSW) offers all the same features as its WSS 2003 counterpart. The only significant difference is the management interface, which functions

as an MMC snap-in that supports both local and remote access. It allows you to use raw, unformatted storage devices or file devices and present them to the network as iSCSI targets. Installation is a swift affair, and the console is extremely easy to use. You can start by creating storage pools that comprise multiple raw or file devices, allowing them to be combined into a single device. Say you have two 250GB drives: these can be combined into a storage pool and presented as a single 500GB device to the host systems, which can then be carved up into logical units (LUs). The advantages here are that more devices can be added to the pool as demand increases, and either new LUs created or existing ones expanded on-the-fly.

Creating devices is easy enough. You choose an unformatted drive or create a file device by selecting an existing volume and then choosing how large it should be. For LU creation, you pick a device from the list and enter a size. This approach means a single device can support as many LUs as you want. Access control comes next, and each host system can be blocked or allowed read-only, exclusive read/write or shared read-write privileges. Host creation is made easier as iSSW can resolve IP addresses from their host names. Three levels of authentication are supported and you can choose from anonymous, CHAP (Challenge-Handshake Authentication Protocol) or Mutual CHAP. The host initiator names are then added manually, but if the host has already logged on to the server they'll be displayed automatically. All configured LUs are listed next and you decide what access, if any, the host is allowed to each one. Each LU is then shown as an available target at the host, so they can log on and use them as though they were locally attached drives.

For testing, we used a dual-Xeon Windows Server 2003 system with a 146GB unformatted drive for our storage pool. This was carved up into multiple LUs. From another Server 2003 system, we used Microsoft's iSCSI initiator 2 software and logged onto one LU. Raw read performance was quite impressive, as the open-source Iometer configured with two workers and 64KB sequential requests reported 88MB/s, which is easily on a par with many appliance-based solutions.

FalconStor does have competition in this market space, although we've always found



▲ File and raw devices are supported, and FalconStor's MMC snap-in makes light work of configuration.

DataCore's SANmelody overly complex and costly. String Bean Software's WinTarget is a more worthy opponent, and the standard version has the advantage of additional target support for Windows 2000 and XP. However, FalconStor's iSSW is just as good value – simple to use and offers a wealth of optional features, including snapshots, mirroring, multipathing and replication.

Dave Mitchell

REQUIREMENTS

Windows Server 2003, Windows Storage Server 2003. Base price includes support for 16 host connections. Options: Mirroring, Base code and Snapshot included.

LABS VERDICT

iSCSI target presentation doesn't get much easier than the FalconStor method, and its optional features make this highly suited to the enterprise as well as the SMB.

Performance ★★★★★
Features & Design ★★★★★
Value ★★★★★

OVERALL ★★★★★

King Server

Dell PowerEdge 2800

PRICE: \$8965 WARRANTY: 3yrs onsite NBD

SUPPLIER: Dell 1800 812 393 WEB: www.dell.com.au



EXCLUSIVE



With sales of AMD dual-core Opteron steadily increasing, it's no surprise that Intel caved in under the pressure – allegedly. The result is the first dual-core Xeon processor much earlier than expected, with Dell as the first to market the new Xeon.

In this exclusive review, we bring you Dell's new PowerEdge 2800 pedestal server, which comes equipped with a pair of 2.8GHz dual-core Xeons. This processor wasn't meant to be, as it didn't appear on Intel's original product roadmap. Coined the Paxville Xeon DP, it could be seen as a knee-jerk reaction by Intel, as its plan had been to release the Paxville Xeon MP and Dempsey Xeon DP processors later in 2006. You can see this in Intel's latest naming conventions. The Xeon MP is being rebranded as the Series 7000 and the Dempsey DP as the new Series 5000. At the top of the pile are the dual-core Itanium Montecito and Montvale processors, which will be known as the Series 9000. Intel's Paxville Xeon DP doesn't actually have a new monicker and stands out on its own, as it's the only dual-core processor supported by Intel's E7520

has the hardware activation key installed, a 256MB module of DDR2 cache memory in a separate slot on the daughterboard, and the battery backup pack alongside. Access to the PCI Express slots looks tricky, but pulling a lever underneath the daughterboard allows the entire assembly to be removed sideways and clear of the chassis.

Dell has also covered the power consumption and heat output concerns. The review system came supplied with a 930W power supply and the chassis has room for a second redundant supply. Cooling is quite remarkable, as the processors are fitted with large passive heatsinks and both have two dedicated 50mm fans, each mounted in individual hot-swap carriers. There are also two larger hot-swap fans for general chassis cooling. The fans must all be

'This mighty 5U chassis offers plenty of storage capacity, as the hard disk bay at the front has room for up to eight hot-swap hard disks'

▲ Dell is the first to market dual-core Xeons, and makes its arrival in style.

LindenHurst chipset – the later models are all likely to utilise the E8501 chipset.

PowerEdge 2800's mighty 5U chassis offers plenty of storage capacity, as the hard disk bay at the front has room for up to eight hot-swap hard disks. The front panel is made of heavy-gauge steel, and above the drive bays is a low-profile CD-ROM/floppy disk drive unit. The hard disk backplane extends ATA and floppy interfaces to this small bay and the unit can be unplugged and removed from the server just by pulling a small release lever. Installation of devices in the 5.25in bays above couldn't be easier. With the side panel off, another release lever allows the entire front assembly to be pulled forward a couple of inches for easier access to the backplane connectors and bays.

Dell has gone down the modular route for the internals, so the motherboard is mounted vertically, while the expansion slots are presented in a horizontal daughterboard fitted at the base. Standard SCSI services are handled by an LSI Logic dual-channel Ultra320 chipset mounted on the daughterboard. The two interfaces are positioned near to the drive backplane. Dell's PERC 4E/Di RAID controller comes fully enabled. The server

removed to get at the processors, but this is a cinch, as the entire assembly with all six fans still in situ can be pulled out. Airflow over the memory sockets is directed by a large plastic shroud, and this has two more fans fitted to vent out air at the rear. We expected the 2800 to be a noisy customer, but we were pleasantly surprised. Once the fans had settled down after power-up, the server was remarkably quiet, making it a good candidate for office duties.

Dell's local and remote management facilities compare well with those provided by HP and IBM. The bundled OpenManage suite comprises the Server Assistant and Administrator, IT Assistant and Array Manager utilities. Installation is simple enough, as Dell supplies one CD-ROM to automatically set up a server to be managed and another to turn a networked system into a management console. The price also includes Dell's DRAC 4 remote management card, which allows the server to be accessed via a web browser and controlled irrespective of its condition.

Ultimately, the PowerEdge 2800 sets a high standard, offering a tempting specification at a reasonable price. Redundancy and build quality are excellent and the system has

enough expansion potential to ensure it can cope with increasing demand for many years.

Dave Mitchell

SPECIFICATIONS

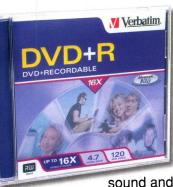
5U pedestal chassis; Dell motherboard; 2 x 2.8GHz dual-core Xeons with 2 x 2MB L2 cache; 800MHz FSB; Intel E7520 chipset; 2GB PC2-3200 SDRAM expandable to 12GB; LSI Logic 53C1030 dual-channel Ultra320 SCSI; Dell Perc 4E/Di RAID controller with 256MB PC2-3200 cache memory and battery backup unit; supports RAID0, 1, 5, 10, 50 and JBODs; 3 x 36GB Maxtor Atlas II 15K Ultra320 hard disks in hot-swap carriers; 2 x Intel PRO/1000 MT Gigabit Ethernet; hot-plug PCI Express slots 8x and 4x; 3 x 133MHz PCI Express and 1 x 32-bit PCI slots; DRAC 4 remote management card; embedded IPMI 1.5 BMC; ATI Radeon 7000 graphics; 930W hot-swap power supply; Dell OpenManage software suite supplied.

LABS VERDICT

If you just can't wait for dual-core Xeons, Dell has the answer. This pedestal server delivers a cracking specification for the price, superb build quality and an unbeatable warranty.

Performance	★★★★★
Features & Design	★★★★★
Value	★★★★★
OVERALL	★★★★★

GET IN THE FAST LANE



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Custom PC workstation

Iplex AllStation X 5000

PRICE: \$4210 **DELIVERY:** Depends on reseller

SUPPLIER: Iplex 1800 057 477 **WEB:** www.iplex.com.au

Last month, HP disproved the theory that a business-oriented workstation was just an excuse to charge more for a regular PC (March 2006, page 76). With consumer PCs these days being as fast as the supercomputers of yesteryear, are dedicated workstations still relevant? Coming in at \$4200, Iplex-newcomer Iplex AllStation X is up against very high end consumer PCs and so we expected a great deal.

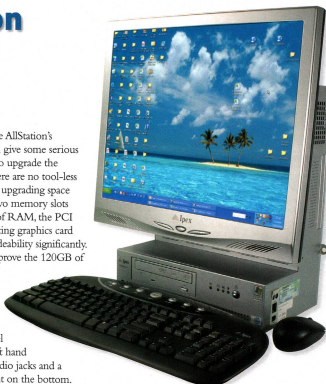
At first glance, the specs are promising: There's 2GB of DDR 2 RAM and two superfast, 10,000rpm 75GB WD Raptors running in RAID0+1 (with Intel Matrix mirroring). The Processor is a dual core 3.2GHz Pentium D 840 – as used in our benchmarks' reference PC. But, after pounding through our benchmarks, the system came in at four percent slower than our reference PC. Certainly it's fast for many applications, but notebooks nowadays can match or beat it.

Last month's HP xw9300 Workstation also sported dual NVIDIA Quadro FX 3400 SLI cards running in SLI. While it cost almost \$13,000, graphics professionals still require the performance and customisation levels that dedicated workstation graphics chips provide, so it was disappointing to see only a consumer

four tiny screws to access the AllStation's innards at the back and then give some serious thought how you're going to upgrade the embedded components. There are no tool-less quick release slots here. And upgrading space is limited. While there are two memory slots left for increasing the 2GB of RAM, the PCI slots are all low profile, limiting graphics card upgrades and general upgradeability significantly. There's one 3.5in bay to improve the 120GB of hard disk space.

Still, at least a speedy dual layer DVD writer is included (though there's no room for another). Six USB 2 Serial and Parallel ports are included on the left hand side and two USB 2, two audio jacks and a FireWire port are at the front on the bottom.

Iplex claims whisper quiet operation though its power-on roar is one of the loudest we've heard. Fortunately, this fan quickly silences when idling, though it gets distractingly loud again when under load. In use, the main noise comes from occasional hard disk clicking which sounds like a coffee percolator (it wasn't annoying though). The system case runs hot but seems to act as



▲ The AllStation's 'L' shape is certainly eye catching – if not suited to upgrading.

Even so, we can see few people desperate enough to pay such a premium for a relatively modest system just because they want a small footprint.

In terms of service, the three years RTB offering pales in the light of HP and Dell's Next Business Day onsite offerings. Other features like a Trusted Platform Module for secure encryption and Intel's comprehensive remote management system are all available with Dell's OptiPlex range. The OptiPlex also offer a great variety in physical size and cost half the price of the AllStation.

Unfortunately, the only benefit we can see of the Iplex AllStation X 5000 is that it's the first small business-oriented PC to offer a dual core processor. However, it still underperforms for the price. Plus, the likes of HP and Dell offer better-value alternatives.

Nick Ross

SPECIFICATIONS

3.2GHz Intel Pentium D 840; 2GB PC2-4300 RAM; Intel 945TP-LKR motherboard; 2 x WD Raptor 10,000rpm hard disks (Matrix RAID0+1); Pioneer DVR-100 dual-layer DVD writer; ATI Radeon X700 graphics; Gigabit Ethernet; Iplex 19in LCD monitor; Windows XP Pro; 3yrs RTB warranty.

LABS VERDICT

A quirky business 'workstation' which offers little beyond mediocre consumer PC performance at a high price.

Performance
Features & Design
Value



OVERALL



'With consumer PCs these days being as fast as the supercomputers of yesteryear, are dedicated workstations still relevant?'

ATI Radeon X700 card was included – this is last-generation consumer performance. While this is no machine for gaming, benchmark scores of under 20fps in our standard 3D benchmarks show this is no 3D workstation.

The custom case includes a mounting for the LCD monitor. This reduces the footprint to just 20cm all in all. But a business computer also needs to be easily accessible to onsite engineers – as Dell's GX620 range (October 2005, page 56) and HP's dx1510 (March 2006, page 77) in Labs recent offerings illustrate. You need to unscrew

one large heatsink. We witnessed no stability issues. Other disappointments are the keyboard and mouse which are simply rebadged low-end Logitech wireless offerings – we'd expect a laser-quality mouse at least for this money.

The LCD monitor we got was an Iplex-branded 19in unit, though the company will attach anything you require. The review unit didn't have the fastest response time (its specs are unstated), meaning lag was noticeable around moving objects – though not to a particularly distracting degree. But colours were displayed well. Just note that some power users will feel limited by the 1280 x 1024 resolution. If you want to quickly adjust the monitor, only tilt is available. If you want to raise the height, you have to physically pick it up and pull it off the mounting brackets which work like wardrobe shelves. While inelegant, the degree of movement is generous. Just hope no one drops it.

The obvious customisation of the case is what stands out about this system, but we're still not convinced it's worth it. Dell's OptiPlex GX620 USFF has a smaller footprint when mounted on the back of the monitor though only larger GX620 options in the range match the power.

RESULTS

3D SCORES



2D SCORES



OFFICE: 0.93 2D GRAPHICS: 1.00
ENCODING: 0.99 MULTITASKING: 0.93

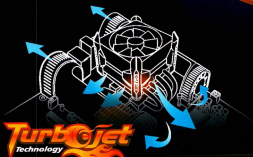
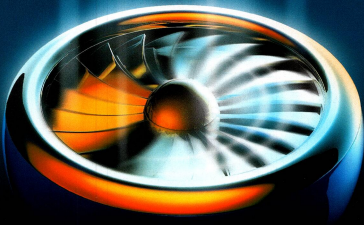


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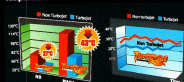
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Creative Sound Blaster

Creative Sound Blaster Live 24-bit with DTS support delivers heart pounding 7.1 channel surround effects.



C.R.S. (CMOS Reload Switch)

C.R.S. provides convenient default settings retrieval and jumper-free CMOS reload.



Turbojet Technology



Dual PCI-e Graphics Slots



Gigabit LAN



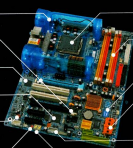
Creative Sound Blaster



S/PDIF In/Out



C.R.S. (CMOS Reload Switch)



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THE NEW BREED

The first wave of Centrino Duo notebooks has arrived in Australia. We show you which ones deserve your cash.

Last month we saw the potential of Intel's new Core Duo chip, which sported two Pentium M cores that share 2MB of Level 2 cache – all the while averaging just one Watt of power consumption. The first notebooks we saw then were very high end and put the performance of Intel's best desktop processors to shame. However, only a few models are yet available in Australia and we've got most of them here.

This month's offerings range in price from \$2237 to \$3199. All but the 17in Toshiba have 15in screens and all weigh around 3kg. As such, they can all be considered mid-range notebooks – there are no ultra portables and no break-away power demons. In fact, none of them sport exciting 3D graphics chips either so we've treated any 3D performance as a bonus feature point this month, rather than calculating a quantitative benchmark. Despite the lack of 3D, these are still some very powerful notebooks for the money. If you want to do some heavy number crunching or some serious encoding on the move, these offer better performance than many desktop PCs on the market.

But most people will simply see the benefits of dual-core notebooks through their greater responsiveness. Even with today's widely-available and powerful machines, the bane of 'hanging' computers, which are struggling to do two things at once, are still a common sufferance. Dual-core greatly reduces this.

We've also included an AMD rival. AMD doesn't have anything to compare to the portable power of Intel's dual-core mobile chips yet, but its desktop dual-core processors are something else. This month Pioneer sent us a notebook which uses AMD's super fast X2 4800+ dual core processor. But will it perform as well in a laptop as on a PC? Check out the special review in this feature.

But before flicking on to the award winner, be sure to read How We Test to find out what we threw at each machine before handing over the laurels. Also, don't forget to check out the Feature Table at the end of the feature for a thorough rundown of what each notebook manufacturer provides.

Labs Editor: Nick Ross



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How we test

Our benchmarks are more than capable of sorting out these dual-core notebooks. Here's how we work out the star ratings.

At the end of each review, we give five star ratings. These include Performance, Features & Design, Value for Money and an Overall rating. We don't just pluck these figures out of the air: they're calculated using a complex array of benchmark results, objective scores and subjective quality ratings.

Performance

We carefully put each machine through its paces in a rigorous series of tests using real-world applications such as Word, Access, Photoshop and CorelDRAW.

The 2D Performance result is relative to a score of one from our reference PC – a dual-core 3.2GHz Pentium D 840 system with 1GB of PC3200 RAM, a 10,000rpm Western Digital Raptor hard disk and an NVIDIA 6600 GT graphics card.

This month, we've not included 3D performance in this rating as all competitors are mediocre at best, and three of them don't have any 3D capability at all. Instead, we factor 3D performance into feature points this month. Nonetheless, we use Half-Life 2 and Far Cry for 3D testing, with a resolution of 1280 x 1024 and with 4x anti-aliasing and 8x anisotropic filtering enabled. The results are displayed here.

Battery Life

We run three tests to measure battery life. In our light-use test, we run a simple timer application until the battery runs out; in the intensive test, we push the processor to its limit.

Features & Design

The Features & Design score is calculated using a huge array of scores given to each machine based on objective measurements, such as the range of connectivity options and the hard disk capacity. We also give scores for software bundles and, more

importantly, points are given for the amount and type of warranty. We prefer on-site cover, but collect-and-return is also highly rewarded.

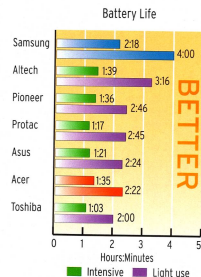
The rating also includes some subjective scores, which are decided by a panel of judges to help overcome any bias resulting from one person's taste. The subjective scores cover all those items that can't be measured objectively, such as build quality and screen quality.

Value for Money

Value for Money is based on a weighted average of the individual Performance and Features & Design scores; we then factor in exactly how much each machine costs to give a bang-per-buck result.

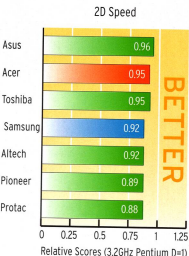
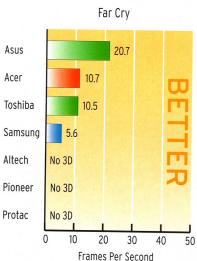
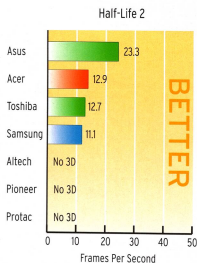
Overall

The Overall rating is a straight average of the Performance, Features & Design, and Value for Money scores.



SUBJECTIVE RESULTS

Ergonomic ratings	Acer	Altech	Asus	Pioneer	Protac	Samsung	Toshiba
Keyboard quality	4	2	4	3	3	5	4
Cursor control quality	4	3	4	2	2	5	5
Build quality	4	4	4	4	4	4	4
Style rating	3	3	4	2	2	4	4
TFT quality	4	4	4	3	3	3	5
Speaker Quality	2	4	4	2	2	4	4
Total (out of 36)	21	20	23	16	16	25	26



Acer Aspire 5672WLMi

PRICE: \$2532

SUPPLIER: www.dontpayretail.com.au

Acer's latest Aspire has the familiar Acer look we've come to expect in recent months but with a few nice tweaks. The metallic silver plastic chassis is complemented by attractive black detailing around the screen, sides, trackpad and keyboard. It's not the toughest chassis, but it's certainly well built.

The keyboard was one of the best and is very comfortable to type on – each key press is well-weighted and crisp. The trackpad was also good, though the buttons click a little too loudly.

The 1280 x 800 widescreen is bright and well-lit, giving a clear and crisp desktop. However, even with the glossy colour-enriching 'CrystalBrite' coating, some colours were subdued. Viewing angles were modest too. But lag was minimal and watching movies was enjoyable – unfortunately the same can't be said for gaming. The ATI X1400 Mobility graphics couldn't cut it in our games benchmarks with framerate hovering around 10fps in both Far Cry and Half-Life 2. You'll have to seriously drop detail settings to get the latest releases anywhere near playable. Also disappointing were the tinny speakers which lacked punch.

But these are the only real downsides. With its 1GB of RAM and 1.67GHz Pentium MT1300 processor, it scored 0.92 in our benchmarks – just eight percent slower than our speedy reference



desktop PC. Acer also wins in features. Not only is 802.11a/b/g Wi-Fi included, but a Bluetooth 2 chip is too. Both devices can also usefully be switched off via sliders at the front.

A Bluetooth VoIP phone is included which is housed in the ExpressCard slot. There's plenty of other connectivity too. The front sports three audio jacks (one doubles as S/PDIF), an infrared and a memory card slot which support MS, SD/MMC and xD formats. Four USB 2 ports are catered for and a useful DVI port appears in addition to VGA and S-Video. There's also a rotating 1.3megapixel webcam and a 100GB of hard disk space (though some is reserved for the recovery partition) as well as a dual-layer, slot-loading DVD writer.

Crowning glories include features like Acer's multimedia Arcade which offers Media Centre-like functions. We're also fans of the GridVista layout system which organises desktop windows into specific regions of the screen and ePower Management which gives excellent control over power settings, like processor speed and the ability to power down some components.

Battery life was modest, varying from one-and-a-half hours to two hours 22 minutes in our intensive use and light use tests respectively. Its



3kg weight also slightly limits portability. But all in all, it's an attractive system and great value at \$2532. However, it only just nudged ahead on the Samsung due to its screen, so check out the R65 before you buy.

LABS VERDICT

What it lacks in 3D performance it more than makes up in features, power and value.

Performance
Features & Design
Value



OVERALL



Samsung R65

PRICE: \$2367

SUPPLIER: www.dontpayretail.com.au

There was very little to separate the top two, and very little disgrace in finishing second for Samsung. The silver black chassis isn't miles from Acer's – it's just a little more understated and a touch more rigid. It's also 200g lighter than the Acer. The main difference between the two is that Acer sports a 15.4in widescreen to Samsung's 15in 4:3 screen – not necessarily a bad thing, but Acer's 1280 x 800 resolution gives a noticeable benefit in desktop real estate compared to Samsung's limiting 1024 x 768. Performance was similar – colours and viewing angles weren't great but movies looked good and there was little lag.

Other ergonomic inclusions were good. The keyboard is crisp and very easy to type on and the trackpad is sensitive, fast and accurate. The speakers are quite loud and punchy but lack bass.

Despite the fast sounding GeForce Go 7400 graphics, this is no gaming machines as 10fps in both Half-Life 2 and Far Cry testify to. You'll have to seriously reduce quality settings to play the latest releases. But while it wasn't the fastest notebook, the 1.67GHz Pentium MT1300 processor and benchmark score of 0.89 isn't slow – just 11 percent slower than our reference PC. Still, in this closely-rated company, the speed hit inflicted by 512MB of RAM was enough to drop marks.

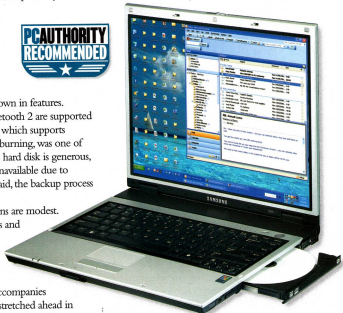


But it more than held its own in features. 802.11a/b/g Wi-Fi and Bluetooth 2 are supported and the TEAC DVD writer, which supports DVD-RAM and dual-layer burning, was one of the best on show. The 80GB hard disk is generous, though almost a quarter is unavailable due to recovery partitioning. That said, the backup process is still a nifty feature.

Wired connectivity options are modest.

There are three USB 2 ports and a memory card reader (MS and SD/MMC) but no DVI port and the Ethernet is limited to 10/100 speeds. However, an ExpressCard accompanies the Type II PC Card. But it stretched ahead in battery life – managing to run our gruelling multiple application test for two hours 18 minutes. In the light-use test, it managed four hours – the longest this month.

There's also a very desirable one-year international onsite warranty to cover potential problems. But the best thing about it is the price. At \$2367 only Altec's machine is cheaper. If you want a bit more portability and don't mind being limited by a 1024 x 768 screen resolution, then many would do well to save almost \$200 and buy this instead of the Acer.



LABS VERDICT

A close second to the Acer. If you don't mind the 1024 x 768 screen, it may even be a better choice.

Performance
Features & Design
Value



OVERALL



Altech ECS Media Center G610

PRICE: \$2200

DELIVERY: \$45 Sydney (Australia Post elsewhere)

The look of Altech's offering split the office. Some liked the glossy chassis, while others thought it too lumpy. But aesthetics aside, it's a solidly built notebook. The keyboard is loose and rattly and we often found the odd letter hadn't registered. The trackpad works well but is a little small and the buttons too loud. But we liked the wide aspect 1280 x 800 screen. The glossy coating enriches colours, making pictures and movies look good. Lag was minimal and viewing angles weren't bad.

This is all good considering the G610 uses Windows XP Media Center Edition. Watching TV and slideshows will prove to be a veritable joy and is enhanced by the speakers which, while not as clear as Toshiba's Harmon Kardons, offer a good dynamic range, punchy bass and get nicely loud.

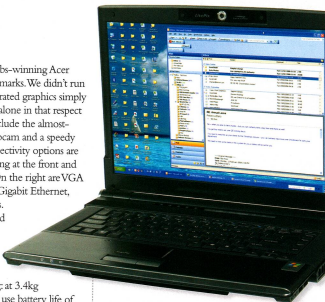
Unfortunately all of this is hamstrung by the measly 40GB hard disk. A half-hour program takes up almost 2GB – you won't fit much TV on it, even without a library of music and pictures to go with it. Rather than use the internal tuner slot, Altech has bundled the reliable USB 2 Hauppauge Nova-T USB Digital tuner. You'll need a separate aerial to stick into it though. Also note that no MCE remote is included in the price.

Under the bonnet is a 1.8GHz Pentium M T1400 and 1GB of RAM. But the beefy processor

still couldn't quite beat the Labs-winning Acer and scored 0.91 in our benchmarks. We didn't run any 3D tests as the Intel integrated graphics simply won't play games, but it's not alone in that respect this month. Other features include the almost-ubiquitous 1.3 megapixel webcam and a speedy dual-layer DVD writer. Connectivity options are modest with no ports appearing at the front and two USB ports at the back. On the right are VGA and S-Video ports, modem, Gigabit Ethernet, two USB and two audio jacks. On the left is a SD/MMC and MS media card reader, mini FireWire and PC Card slot. Fortunately, 802.11a/b/g WLAN is included.

Portability was a mixed bag: at 3.4kg it's second heaviest, but a light use battery life of three hours 16 minutes was very impressive. Under intensive usage it scored a more modest one hour 39 minutes.

The term 'mixed bag' sums up the G610. Some of the features, like MCE, are great while others are lacking (no remote, small hard disk and no recovery options). But it's also cheap and has a good one-year onsite warranty. As such, if budget is your priority it's a good choice, but most people are better off with the Samsung or the Acer.



LABS VERDICT

Cheap and with some quirky features, the G610 is not unattractive.

Performance	★★★★★
Features & Design	★★★★★
Value	★★★★★

OVERALL ★★★★★

ASUS A6Ja

PRICE: \$3199

SUPPLIER: Contact ASUS 1300 2787 88

We quite liked ASUS' charcoal grey styling, but it was more of an understated cool than a head turner. It feels exceptionally sturdy and well built, even if it's a little on the heavy side at 3.2kg. Portability is further hindered by the modest battery life scores of two hours 24 minutes in our light use test, and one hour 21 minutes in our intensive test. All in all, it's mid-table in terms of bulk and weight.

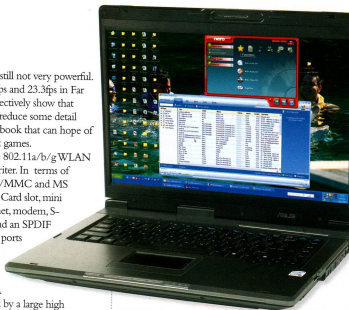
Ergonomically, it's not bad. The keyboard is a little stiffer compared to the Acer and Samsung equivalents, but it's accurate and comfortable. The trackpad was nice and accurate too and the buttons made refreshingly light clicking sounds. The screen is similar to Acer's 1280 x 800 widescreen and offers a crisp desktop. The glossy coating made movies enjoyable to watch and viewing angles were a bit better too. There was only a little lag but it wasn't distracting. The speakers got loud, but lacked bass.

Powering the notebook is a 2GHz Pentium M T1500 which was one of the faster chips on show. This, alongside 1GB of RAM and the 100GB hard disk, managed a benchmark score of 0.96 – the highest on show and only four percent behind our reference desktop PC. Where the ASUS accelerated away from the field was in the 3D tests. The Radeon Mobility X1600 chip is noticeably

the best on show, but it's still not very powerful. However, scores of 20.7fps and 23.3fps in Far Cry and Half-Life 2 respectively show that while you'll still need to reduce some detail settings, it's the only notebook that can hope of playing some of the latest games.

Other features include 802.11a/b/g WLAN and a dual-layer DVD writer. In terms of connectivity, there's a SD/MMC and MS memory card reader, PC Card slot, mini FireWire, Gigabit Ethernet, modem, S-Video two audio ports and an SPDIF jack. There are four USB ports but, annoyingly, these are all clustered at the back on the right. At the back a DVI port joins the VGA and the webcam is joined by a large high quality microphone – a definite enhancement over the usual hole in the chassis.

A modest two year RTB warranty is thrown in but Windows XP Professional is a bonus. While it's true that you'll be able to pick up the A6Ja for less than the \$3199 by the time you read this, it takes more than a huge price drop to make the ASUS competitive in this field. Both the Acer and Samsung simply offer more for less money. As such we can't recommend the A6Ja this month.



LABS VERDICT

A nice machine, but both Samsung and Acer offer more for less money.

Performance	★★★★★
Features & Design	★★★★★
Value	★★★★★

OVERALL ★★★★★

Pioneer DreamBook Slim 550

PRICE: \$2399

SUPPLIER: www.pioneercomputers.com.au

We did a double take this month. Not only are Pioneer and Protac's chassis identical, but the inside specs are too. In fact, one of the only differences between the two is that Pioneer's warranty is one year onsite compared to Protac's inferior one year RTB. The other difference is price. The Slim 550 costs \$2399 while the Protac M555N is a whopping \$500 more. You get free delivery with that, compared with Pioneer's \$20 charge, but we're hard pressed to imagine a location where it would be worth your while ordering Protac's notebook instead.

But while Protac struggled to keep up with the competition, Pioneer finished in the middle of the pack. What stands out from the specs is the processor – a 2.16GHz Pentium MT1600 – the fastest on show. However, in our benchmarks it, along with 512MB of RAM and a 60GB hard disk, managed a score of 0.95. To be fair, our review sample was a preproduction model and we expect this to match our desktop PC by the time you read this. We didn't run our 3D tests because Intel's integrated graphics can't handle them.

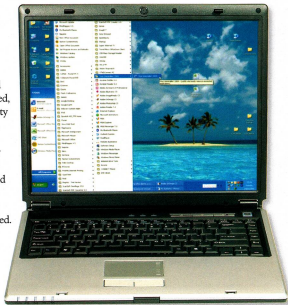
The ergonomics weren't the best. The keyboard is very rattly. However, it's more of an annoyance than a limitation. We didn't like the trackpad – too much friction and the buttons required too much force to press them. Still, the screen wasn't bad, and

those people who despise glossy coatings will like the matte finish. Colours aren't as saturated, but reflections vanish. Viewing angles are pretty good compared with the others on test here. Like the Samsung, it sports a 15in 4:3 aspect diagonal with a 1024 x 768 resolution. Many will warm to the naturally larger icons and clearer lettering. The speakers sound tinny and distant, making this unsuitable for music.

A webcam is in the top of the screen but, disappointingly, only a combo drive is included. Connectivity options are modest. There are three audio jacks plus S/PDIF. A SD/MMC and MS memory card reader hides beneath the PC Card slot, but there's nothing else beyond the common mini FireWire, Gigabit Ethernet, S-Video, VGA and three USB 2 ports.

At 2.6kg it's the lightest, and combined with battery scores of one hour 36 minutes and two hours 46 minutes help portability. But unfortunately, it still can't match the Samsung.

All in all, if you need some serious power on the move but at a budget price, Pioneer's Slim 550 makes sense. However, if you want a few luxuries and better build quality, it's worth spending a bit more on the similar Samsung or Labs Winning Acer.



LABS VERDICT

Powerful for the price, but the Samsung is much better for just a few dollars more.

Performance	★★★★★
Features & Design	★★★★★
Value	★★★★★

OVERALL



Protac Excel M555N

PRICE: \$2899

SUPPLIER: www.protac.com.au

We're doing our best to champion Australia's home grown White Box market. As such we have no qualms about machines appearing in identical chassis – it's the way the business works. We might raise the odd eyebrow when the specifications are identical though and this month Pioneer and Protac submitted the same machine right down to the model number of the optical discs. But, the simple fact remains that Protac is charging \$500 more for an identical notebook and offering an inferior one-year RTB warranty. You do get free delivery, but that's it.

Both machines look rather plastic, though not significantly more so than the Labs-winning Acer. Regardless, both are rigid and sturdy. The screens are the only ones without glossy, colour-enhancing coatings but there are far fewer distracting reflections as a trade off. The 1024 x 768 resolution doesn't suit people who work with many windows open at the same time, but icons and labels are easier to read. Viewing angles and lag weren't bad and a clear desktop is produced. The speakers underneath were poor and tinny.

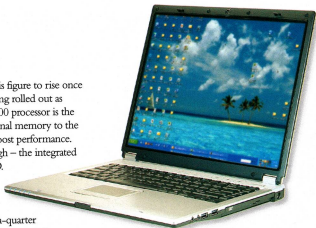
Pioneer's notebook is a preproduction model and we suspect Protac's is too, owing to the identical performance. It scored 0.95 in our benchmarks which was only just beaten by the

ASUS. However, we expect this figure to rise once full-production models are being rolled out as the 2.16GHz Pentium MT1600 processor is the fastest on show. Adding additional memory to the existing 512MB should also boost performance. Gamers aren't supported though – the integrated Intel graphics won't handle 3D.

Both laptops were among the most portable, weighing in at 2.6kg. However, the battery life scores of one-and-a-quarter hours in our intensive test and two-and-three-quarter hours in our light-use test were still some way behind the slightly-larger Samsung.

The low features score isn't helped by the inclusion of a combo drive – not what we expect for almost \$3000. There's no wireless connectivity included either. Wired connectivity options include three audio jacks and a S/PDIF; three USB ports, mini FireWire, Gigabit Ethernet, modem, S-Video and VGA. There's also a memory card reader which supports MS and SD/MMC formats and a PC Card slot. Above the monitor is an integrated webcam.

All in all it's a middling notebook with quite a bit of oomph, but which is on sale for far too much money compared to the others here. As such, it's Protac that trails behind the pack this



month. If you like the form factor, consider the Samsung. But with Acer's Aspire costing almost \$400 less, there's better value to be had elsewhere.

LABS VERDICT

You can buy the identical machine for \$500 less at Pioneer. It's as simple as that.

Performance	★★★★★
Features & Design	★★★★★
Value	★★★★★

OVERALL



Toshiba Satellite P100

PRICE: \$2999

SUPPLIERS: Major retailers

Toshiba won this month's cat walk competition – the metallic blue lid being a breath of fresh air. The black speaker covers et al and flush media buttons look as though considerable effort has gone into its design.

It's the only 17in widescreen this month and is the biggest by quite some way, despite not being overly heavy at 3.6kg. The resolution of the screen is 1440 x 900 giving you a great deal of desktop to play with. It also has a glossy coating to further enhance colours which already look richer than all others this month. Viewing angles are also good enough for a friend or two to share a movie. There was also minimal lag.

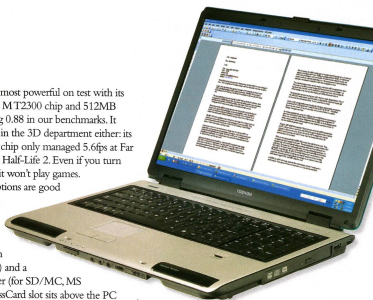
The speakers were also the best – the Harmon Kardon's offered a distinct and wide dynamic range and got impressively loud without distorting. Toshiba also includes a remote control which can be hidden in the PC Card slot. It's just a shame that a TV tuner wasn't included.

We liked the keyboard, except for all the half-size buttons surrounding the (small) Enter key which we kept hitting accidentally. The trackpad was also the best on show, with the pad smooth and responsive. The buttons felt good and didn't click too loudly. We also like the illuminated shortcut zones that the trackpad displays, allowing you to perform a task just by tapping in the right

place. It wasn't the most powerful on test with its 1.67GHz Pentium MT2300 chip and 512MB of RAM managing 0.88 in our benchmarks. It wasn't much chop in the 3D department either: its GeForce Go 7300 chip only managed 5.6fps at Far Cry and 12.7fps in Half-Life 2. Even if you turn the settings down, it won't play games.

Connectivity options are good too – 802.11a/b/g WLAN is included, there are three Audio jacks (one of which doubles as S/PDIF) and a memory card reader (for SD/MC, MS and xD). An ExpressCard slot sits above the PC Card and next to these is a mini FireWire port. Four USB ports are spread around and a DVI port sits next to the VGA and S-Video.

Add to this Toshiba's finger print security, hard disk shock protection, networking utilities, security applications and backup capabilities along with the one year onsite (or international RTB) warranty and you've one desirable notebook. If the Acer and Samsung notebooks felt restrictive in their size then it's a great choice. However, the price is high and performance relatively low, so it just missed an award this month.



LABS VERDICT

If performance and portability aren't an issue, this large, fully-featured multimedia notebook is well worth a shout.

Performance
Features & Design
Value



OVERALL



Pioneer DreamBook Power 900K

PRICE: \$5699 **DELIVERY:** \$20

SUPPLIERS: Pioneer Computers 02 9690 2888

WEB: www.pioneercomputers.com.au

Pioneer's new DreamBook Power uses the Clevo D900K chassis which offers the size and space required to cool the blisteringly fast components contained within (see the specs box below).

At 5.8kg, it's meant to sit on a desk. Battery scores of one hour 22 minutes and one hour 33 minutes respectively in our intensive and light-use tests further limit portability. It's based around the Athlon 64 X2 4800+. Clocking in at 2.4GHz, its two cores are faster than those of the quickest

Core Duo, so despite inferior power efficiency it's an appealing option in the world of desktop replacements. But a benchmark score of 1.06 makes us question whether it's worth the bulk. This is fast but it should be rivalling similarly-specified desktop PC scores of around 1.2. Last month's Acer TravelMate 8204WLMi managed a groundbreaking 1.11. Although only sporting a 15.4in screen, it was nearly 3kg lighter.

Every aspect is upgradeable but Pioneer's choice of two 100GB hard disks and a dual layer DVD writer will keep most people happy for some time. (Note, there's also space for a second optical drive for disc copying). The GeForce Go 7800 GTX chip tore through our 3D tests, scoring 61fps in Far Cry and 76fps in Half-Life 2 – both of which looked great on the glossy 17in widescreen 1680 x 1050 monitor.

If the benchmark scores rivalled the equivalent desktop PC, we'd be happy to recommend it – for now Macron and ITC's powerful Pentium M offerings look more attractive. But if you require the mother of all laptops to provide desktop power and features on the move, the price is worth paying.



SPECIFICATIONS:

2.4GHz AMD Athlon 64 X2 4800+; 1GB PC3200 RAM; 2 x 100GB hard disks; Matchita UJ-840D DVD writer; 256MB nVidia GeForce Go 7800 GTX graphics; 17in 1680 x 1050 LCD; 802.11g WLAN; 56K modem; Gigabit Ethernet; 4 x USB 2; 2 x mini-FireWire; infrared; Bluetooth; DVI; S-Video; parallel; serial; PS/2; Type II PC Card slot; 7-in-1 memory card reader; 1.3-megapixel camera; Windows XP Professional; 1yr C&R warranty. Dimensions: 397 x 298 x 50mm (WDH). Weight: 5.8kg. Part code: nbp-900k.

LABS VERDICT

Fast, but we expected faster. Still, this is the closest you can get to a portable desktop PC.

Performance
Features & Design
Value

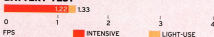


OVERALL

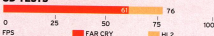


RESULTS

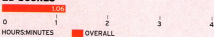
BATTERY TEST



3D TESTS



2D SCORES



BETTER

	Acer Aspire 5672WLMi	Alienware ECS Media Center G610	Asus A6J6	Pioneer Dreambook Slim 550	Protac Excel M555N	Samsung R65	Toshiba Satellite P100	
Overall score	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆	
Manufacturer's code	LX.AA705.070	ECS-6610MB-V2	A6Jat24LIIPG	nbp-550	555-2000	NP-R65TV02/SAU	PSP3A-01NOOP	
Price	\$2532	\$2,237	\$399	\$2399	\$2899	\$2367	\$2999	
Cost of delivery	From \$15	Free	Depends on reseller	20	Free	From \$15	Depends on reseller	
Supplier	www.dontpayretail.com.au	Alienex 02 8831 9999	Major retailers	Pioneer Computers 02 9690 2888	Protac: 02 8748 8888	www.dontpayretail.com.au	Major retailers	
Manufacturer's website	www.acer.com.au	www.aliex.com.au	http://asus.com	www.pioneercomputers.com.au	www.protac.com.au	www.samsung.com/au	www.ssd.toshiba.com.au	
Dimensions (W/D, mm, including feet)	364 x 275 x 36mm	363 x 296 x 42	354 x 285 x 37	334 x 280 x 40	334 x 280 x 40	330 x 272 x 33	394 x 275 x 42	
System weight with battery (kg)	3.0	3.4	3.2	2.6	2.6	2.8	3.6	
SERVICE AND SUPPORT								
Bundled warranty	1yr International RTB	1yr onsite	2yrs RTB	1yr onsite	1yr RTB	1yr onsite International	1yr RTB International (onsite in Australia)	
Core components								
Processor type	1.67GHz Intel Pentium M T3000	1.83GHz Intel Pentium M T1400	2GHz Intel Pentium M T1500	2.16GHz Intel Pentium M T1600	2.16GHz Intel Pentium M T1600	1.67GHz Intel Pentium M T1300	1.67GHz Intel Pentium M T2300	
Motherboard chipset	Intel i945PM	Intel i945GM	Intel i945PM	Intel i945GM	Intel i945GM	Intel i945PM	Intel i945PM	
RAM fitted	1GB PC2-4300	1GB PC2-4300	1GB PC2-4300	512MB PC2-4300	512MB PC2-4300	512MB PC2-4300	512MB PC2-4300	
Maximum RAM in current configuration	1GB	3GB	2GB	1.5GB	1.5GB	1.5GB	1.5GB	
SODIMM sockets free/total	0/2	2/4	1/2	1/2	1/2	1/2	1/2	
DISPLAY								
Display size (in)	15.4	15.4	15.4	15	15	15	17.1	
Native resolution	1280 x 800	1280 x 800	1280 x 800	1024 x 768	1024 x 768	1024 x 768	1440 x 900	
Graphics chipset	ATI Mobility Radeon X1400	Intel i945GM	ATI Mobility Radeon X1600	Intel i945GM	Intel i945GM	Nvidia GeForce Go 7400	Nvidia GeForce Go 7300	
Video memory	512MB	8MB	256MB	8MB	8MB	256MB	128MB	
Outputs	DVI, VGA, S-video	VGA, S-video	DVI, VGA, S-video	VGA, S-video	VGA, S-video	VGA, S-video	DVI, VGA, S-Video	
Drives								
Hard disk (make and model)	Seagate Momentus 5400.2	Fujitsu MH120408H	Hitachi TravelStar 5K100	Fujitsu MH120608H	Fujitsu MH120608H	Hitachi TravelStar 5K100	Toshiba MK8032GSX	
Speed (rpm)	5400	5400	5400	5400	5400	5400	5400	
Removable by user	Y	Y	Y	Y	Y	Y	Y	
Nominal capacity	100GB	40GB	100GB	60GB	60GB	80GB	80GB	
Formatted capacity	89.1GB	37.0GB	93.1GB	55.8GB	55.8GB	63.9GB	74.2GB	
Optical drive and speed	DVD writer: Matshita LU-B455 (8x DVD-R, 4x DVD-RW, 8x DVD-R, 4x DVD-RW, 3x DVD-RAM, 2.4x DVD-R9 DL, 8x DVD-ROM, 24x CD-R, 10x CD-RW, 24x CD-ROM)	DVD writer: LG GWA4082N (8x DVD-R, 8x DVD-RW, 8x DVD-R, 4x DVD-RW, 2.4x DVD-R9 DL, 8x DVD-ROM, 24x CD-R, 10x CD-RW, 24x CD-ROM)	DVD writer: Samsung TS-L532M (8x DVD-R, 4x DVD-RW, 8x DVD-R, 4x DVD-RW, 2.4x DVD-R9 DL, 8x DVD-ROM, 24x CD-R, 10x CD-RW, 24x CD-ROM)	Combo drive: TS-L462C (8x DVD-RW, 24x CD-R, 24x CD-RW, 24x CD-ROM)	Combo drive: TS-L462C (8x DVD-RW, 24x CD-R, 24x CD-RW, 24x CD-ROM)	Combo drive: TS-L462C (8x DVD-RW, 24x CD-R, 24x CD-RW, 24x CD-ROM)	DVD writer: TEAC DV-W282A (8x DVD-R, 2.4x DVD-R9 DL, 4x DVD-RW, 8x DVD-R, 2x DVD-R9 DL, 4x DVD-RW, 5x DVD-RAM, 8x DVD-ROM, 24x CD-R, 16x CD-RW, 24x CD-ROM)	DVD writer: LG GWA4082N (8x DVD-R, 2.4x DVD-R9 DL, 4x DVD-RW, 8x DVD-R, 2x DVD-R9 DL, 4x DVD-RW, 5x DVD-RAM, 8x DVD-ROM, 24x CD-R, 16x CD-RW, 24x CD-ROM)
BATTERY								
Battery technology	Lithium ion	Lithium ion	Lithium ion	Lithium ion	Lithium ion	Lithium ion	Lithium ion	
User removable (no screws)	Y	Y	Y	Y	Y	Y	Y	
Capacity of battery (mAh)	4800	4800	4800	4000	4000	5200	4800	
Communications								
Modem (speed)	HDAUDIO (56Kb/s)	Agere (56Kb/s)	Motorola SM56 (56Kb/s)	Motorola SM56 (56Kb/s)	Motorola SM56 (56Kb/s)	Sens LT55ADN (56Kb/s)	HDAUDIO (56Kb/s)	
Network (speed)	Broadcom (Gigabit)	Broadcom (Gigabit)	Realtek (Gigabit)	Realtek (Gigabit)	Realtek (Gigabit)	Broadcom (Gigabit)	Intel (Gigabit)	
Wireless technologies (standard, location)	Intel PRO/Wireless 3945ABG (802.11a/b/g, integrated); Broadcom 2045 Bluetooth 2 (integrated)	Intel PRO/Wireless 3945ABG (802.11a/b/g, integrated)	Intel PRO/Wireless 3945ABG (802.11a/b/g, integrated)	x	x	Intel PRO/Wireless 3945ABG (802.11a/b/g, integrated); Broadcom 2045 Bluetooth 2 (integrated)	Intel PRO/Wireless 3945ABG (802.11a/b/g, integrated)	
Hardware switch for wireless	Y	x	x	x	x	Y	Y	
Ports								
PC card slots	1x Type II	1x Type II	1x Type II	1x Type II	1x Type II	1x Type II, ExpressCard	1x Type II, ExpressCard	
USB	4	4	4	3	3	4	4	
FireWire (IEEE-1394)	1x mini	1x mini	1x mini	1x mini	1x mini	1x mini	1x mini	
Infrared	Y	Y	x	x	x	Y	Y	
Serial	x	x	x	x	x	x	x	
Parallel	x	x	x	x	x	x	x	
PS/2	x	x	x	x	x	x	x	
Memory card slots	MS, SD/MMC, xD	SD/MMC, MS	SD/MMC, MS	MS, SD/MMC	MS, SD/MMC	MS, SD/MMC	MS, SD/MMC, xD	
Other ports	2M, 1 SPD	2M, MCE receiver	2M, 1 SPD	3M, 1 SPD	3M, 1 SPD	1M, 1M / SPD	2M, 1M / SPD	
OTHER PERIPHERALS								
Pointing device type	Trackpad	Trackpad	Trackpad	Trackpad	Trackpad	Trackpad	Trackpad	
Sound chipset	Realtek High Definition audio	Realtek High Definition audio	Realtek High Definition audio	Realtek High Definition audio	Realtek High Definition audio	SoundMAX HD audio	Intel High Definition audio	
Speakers location	Front	Either side of keyboard	Front, underneath	Front, underneath	Front, underneath	Behind keyboard	Behind keyboard	
Hardware volume control	Y	x	x	x	x	Y	Y	
Internal microphone	Y	Y	Y	Y	Y	x	x	
Carry case supplied	x	x	x	Y	Y	x	x	
Accessories supplied	Bluetooth VoIP phone	Huapop Nova-T-USB digital tuner	x	x	x	x	Remote control	
Other	1.3 megapixel webcam	1.3 megapixel webcam	1.3 megapixel webcam	1.3 megapixel webcam	1.3 megapixel webcam	x	Fingerprint reader	
SOFTWARE SUPPLIED								
Operating system	Windows XP Home	Windows XP Media Center Edition	Windows XP Professional	Windows XP Home	Windows XP Home	Windows XP Professional	Windows XP Professional	
Recovery method	Recovery partition	None	Not stated	Windows disc, Recovery partition, recovery CD (optional)	Windows disc	Recovery partition, recovery CD	Recovery disc	
Main titles	Norton AntiVirus	Nitro CD/DVD Maker Gold	CyberLink Power2Go 3 DE, Medi@Show 2 SE, Norton Internet Security 2005, Nero 6 OEM	CyberLink DVD Solution	CyberLink Power2Go 6; Nero OEM	CyberLink DVD Solution	Microsoft OneNote 2004; Sonic RecordNow! 7; InterVideo WinDVD, WinDVD Creator 2 Platinum	

BACKUP SUPERGUIDE

NAS appliances

Sharing files accross your network has never been easier or more affordable. We look at eight NAS appliances from around \$400.

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The first part of our backup superguide deals with Network Attached Storage. NAS appliances are hot property these days. No longer costing thousands of dollars and restricted to large enterprises, you can now put a 160GB NAS device on your network for under \$400.

With the spiralling popularity of disk-hungry media such as photos, music and videos, there's a need not only for extra storage, but storage that's readily accessible from multiple locations.

Sharing media is only one of the many reasons to consider investing in NAS. Most of the devices on test here will also allow you to connect USB printers and share them on your network, share files over the Internet via FTP and back up data to an additional disk for extra security.

It's possible to do all this without a NAS device – by sharing a disk and printer that are attached to a PC on the network – but this would require that computer to be powered on whenever another user wants access to those peripherals. With a NAS appliance, you can just plug it into your wireless router – or a normal router, switch or hub.

Not only will NAS save you money on your electricity bill, but it's far more convenient too. You can manage the device from anywhere on the network for sharing, access control and backup, as well as being able to share data across different operating systems – useful if you have Windows PCs and Macs on the network.

One disadvantage of some NAS devices is that they're limited to 100Mb/s – considerably less than the transfer rates of the hard disks inside them. That's why we've included two dual-personality devices from LaCie and Freecom. These can either operate as a NAS device on a 10/100 network or be directly attached via USB 2 when performance is critical.

The eight appliances cover a wide price range and cater for simple and complex requirements, so read on to find out which NAS device best suits your setup.

Contributors: Jim Martin,
Dave Mitchell

How we test

Details of our testing methods and how we work out the ratings.

There are several factors to consider when choosing a NAS appliance, but the main one is to decide how it will be used. If many users will need to store, back up and share sensitive data, the ability to provide user and group access rights is critical. Also, if those users are connecting from different operating systems, support for various clients will be important too. Where data isn't sensitive, but multiple users will need access to large files (for example, video streaming), performance will be more important.

Simple management is also important, so we examine every option in the web interface as well as assessing how intuitive it is to navigate and alter settings.

Performance

We test the performance of each appliance by writing 680MB – the equivalent of a CD worth of data – to the appliance and then reading it back off. Where devices can connect via Ethernet and USB, or Ethernet and Wi-Fi, we test both interfaces for speed. Our setup comprises our usual Labs test rig that has a Gigabit Ethernet controller and a Netgear GS608 Gigabit switch.

Each appliance is connected to the switch using a CAT-5e cable, and we use a second CAT-5e cable to connect the switch to the PC. This setup ensures the Gigabit-equipped appliances on test aren't presented with any bottlenecks that could reduce performance. As it was, we never saw data rates break the theoretical 12.5MB/s limit of 10/100 Ethernet, although the Linksys and Freecom came close.

For the USB tests, we simply connect the relevant models (Freecom and LaCie) to one of our PC's USB 2 ports and run the tests for a second time. The Iomega is the only appliance to offer Wi-Fi, and we rerun the read and write tests using an MSI 802.11g Wi-Fi adaptor attached to the PC.

Features and design

We reward appliances for their main functions, including print servers, FTP servers, data security and client support, as well as for management features such as timed power-up and user quotas.

Likewise, interfaces are allocated points, with Wi-Fi and USB connections gaining reward and USB ports for printers or additional disks also receiving credit. Other physical features such as status LEDs, internal power supplies and any security measures (such as Kensington lock slots) are also



▲ We test using a Gigabit switch to prevent any data bottlenecks.

examined and rewarded. Finally, warranty; the quality of documentation, bundled software and cables are also taken into account.

Quietness

Warranty and cost are always important, and we factor these into our value rating, which can be found at the bottom of each review. Noise, however, can be crucial in quiet environments, so we send the NAS appliances to a specialist testing centre, where their noise is accurately measured. Testing is carried out in an acoustically treated listening room, but under typical user conditions.

The results are in dBA. To put a rough perspective on the measurements, levels of around 25dBA can be compared to the background noise of a bedroom at night,

while 45dBA represents typical living-room background noise. The results are factored into the Features & Design rating.

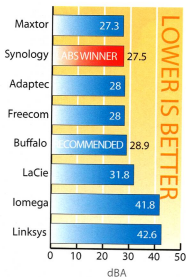
Value for Money

The Value for Money rating is based on a weighted average of the Performance and Features & Design scores. We give the latter a 60 percent weighting and Performance the remaining 40 percent. We then factor in exactly how much each appliance costs (including delivery) to give a bang-per-buck result.

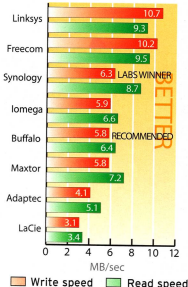
Overall

The Overall rating is a straight average of the Performance, Features & Design and Value for Money scores.

QUIETNESS



PERFORMANCE



Synology Disk Station 101g+

PRICE: \$528

SUPPLIER: www.compucon.com.au

Synology isn't a well-known brand, but that hasn't stopped the Disk Station from winning this Labs. Although more expensive than others, especially considering the 160GB capacity, it offers everything you could want from a NAS appliance.

For a start, it isn't a noisy device (27.5dBA when idle) and the upright form factor means the footprint is minimal too. However, the real attractions are the functions on offer. The Disk Station sits on your network serving files to Windows and Mac clients, and it can also be your web server, FTP server, print server and photo server.

Plus, you can connect an additional USB disk to one of the rear USB ports and use it either as extra storage or to back up the contents of the Disk Station at intervals chosen by you. There's also a handy front USB port for plugging in a USB flash drive, digital camera or single



card reader – push the Copy button and the contents are copied onto the hard disk inside. As a file server, the Disk Station allows you to create up to 128 individual user accounts, 64 groups and up to 100 shares. Public Web

and photo shares are already created, and the well-designed setup application (which runs from CD) finds the Disk Station, steps you through the initial setup and asks you whether you want to mount each share as a network drive in Windows. The web browser is also well designed and lets you manage the device over a network easily. You can choose options such as when the disk spins down after inactivity and whether emails are sent upon events such as the disk becoming full or any errors.

A unique feature is the eSATA port on the rear, which lets you add storage via an external Serial ATA disk.

Next to this is a Gigabit Ethernet connection, but we found transfer rates were similar to the 10/100 devices on test. Write speed averaged at 6.3MB/s, while read speed was quicker at 8.7MB/s. If we have one gripe with the Disk Station, it's the one-year warranty – most other manufacturers offer double this. And it's true that we'd have preferred an internal PSU – like the Buffalo's – but this is a common complaint this month.

Ultimately, the Disk Station's features and performance make it well worth the price and, if its capacity isn't enough, you can opt for the better-value 300GB version for \$606 or even 500GB for \$944.

LABS VERDICT

All the features you'd want from an entry-level NAS appliance. It isn't the cheapest, but the premium is well worth paying.

Performance	★★★★★
Features & Design	★★★★★
Value	★★★★★

OVERALL ★★★★★

Adaptec Snap Server 1100

PRICE: \$706

SUPPLIER: www.minidigital.com.au

Costing \$706 and providing 160GB of storage, some would argue that the Snap Server 1100 isn't as affordable as Adaptec makes out. When you consider that LaCie's Ethernet Disk mini costs only \$395, yet is fitted with a 250GB disk, the Snap Server 1100 appears to offer poor value.

In fact, you have to dig deep before the Snap Server's advantages become obvious. Take the wide client support, for example. Out of the box, the 1100 can serve files to Windows, Mac, Linux, Unix and NetWare clients too. Setup is simple too: on our XP test rig, the CD application auto-ran, discovered the appliance, offered the chance to set an IP address plus date-and-time settings, rebooted the appliance and launched a browser window for the Web management interface. The only job it didn't do was mount the Snap Server as a network drive.

Over the web interface, you can create users and groups of users and the Adaptec is the only one here that allows security on a per-file basis. It's also possible to set a quota for each user, preventing them from using too much disk space. For Windows clients, you can even configure automatic backups to the appliance.

Via HTTP, you can browse files on the appliance remotely – they're displayed in a Unix

style with their attributes alongside. However, unlike others on test, there are no USB ports, so you can't use the Adaptec as a print server, and you're unable to back up the disk's contents onto an external disk or add more capacity.

The front of the appliance offers four status LEDs, one of which is a handy light – it will be obvious if the physical connection is working or not. A small fan is located at the base towards the front, and after 30 minutes of idling, we measured just 28dBA. A bonus is that you can't hear the disk seeking either.

The proprietary SnapOS file system might provide that wide client support, but it does nothing for performance. Writing our test files to the Snap Server took two minutes and 45 seconds, which equates to 4.1MB/s. Reading was 30 seconds quicker at 5.1MB/s. Overall, this put the Adaptec near the bottom.

With good control over user access and file security plus the ability to share those files over so many platforms, the Snap Server begins to justify its high price. However, it lacks a useful print server and expandable capacity – features you can have for considerably less money if you look elsewhere.



LABS VERDICT

Great where access management and data security are important, but the pricey Snap Server can't be expanded and doesn't have an FTP server.

Performance	★★★★★
Features & Design	★★★★★
Value	★★★★★

OVERALL ★★★★★

Buffalo LinkStation HD-H250LAN

PRICE: \$519

SUPPLIER: www.prestigecom.net.au



Buffalo's LinkStation has plenty going for it. It's the only device here with an internal PSU – meaning one less black box cluttering up the place. It's also well built and thoughtfully designed.

For a start, there's a front-mounted power button, so you don't have to feel behind to switch it off as with the others on test. Sensibly, there's a USB port on the front too, so you can easily plug in a printer or USB hard disk.

From this, it's obvious that the LinkStation can function as your network's print server as well as allowing you to add capacity via an external disk (there's a second USB port on the rear). Alternatively, you can configure the LinkStation to back up its contents onto an external disk at a time you specify.

Although there's no official support for Mac clients, the fact that the device supports AppleTalk means you can share files across both platforms. Initial setup couldn't be simpler. Running

the LinkNavigator application starts a search for the appliance and automatically configures the IP address to match your existing setup. If it's connected directly to a PC, it will also mount the default 'disk' share as a network drive.

Like wise, managing the LinkStation is easy. The web interface is well designed and allows you to set when the station sleeps and wakes up, although it can't tell a connected USB disk to sleep and wake up in sync. You can create user accounts and groups to allow or deny access to particular shares.

There's no quota management or email alerts and, like some others, hidden files aren't supported. The latter means that files hidden in Windows will show as normal files on the LinkStation. This is somewhat offset by the fact that there's no file-size limit and you can use the LinkStation to store media and serve it to a LinkTheater.

Another bonus is that the LinkStation is fairly quiet. There's a temperature-controlled fan at the rear, but the 28.9dBA we measured at idle will fade into the background noise. Seeks can be heard occasionally, but from the front they only just nudged over 30dBA.

Performance was slightly down compared to other 10/100 devices, with a write speed of 5.8MB/s and a read speed of 6.4MB/s. If performance is more important than functions, look at Freecom's Classic SL. However, if speed isn't your top priority and you can take advantage of the FTP-, print- and media-serving functions of the LinkStation, it's a decent (and larger capacity) alternative to the Synology.



LABS VERDICT

Good value thanks to generous capacity and plentiful features. The LinkStation is great if you want to share files and printers between PCs and Macs.

Performance	★★★★★
Features & Design	★★★★★
Value	★★★★★

OVERALL ★★★★★

Freecom Classic SL Network Drive

PRICE: \$306

SUPPLIER: www.freecom.com

Freecom's Classic SL is an unusual product. Like the LaCie, it's a cross between a straightforward external USB hard disk and a NAS appliance. This means you can use it as a portable, directly connected disk for fast file transfers, or you can hook it up to your network so everyone can store and share files, albeit at a slower pace.

Another unusual aspect is that it requires client software in order to be able to access it over a network. Instead of appearing as a computer on the network and having an IP address for remote management, the Classic SL uses the NDAS protocol and shows up as a local hard disk in Windows. This isn't a big disadvantage if you only need to share the appliance on a few computers, but a pain if you have to install the software on many.

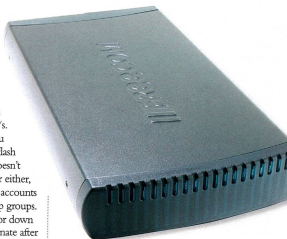
Upon installation, it prompts you to input the code on the bottom of the appliance. This is used to locate it on the network. An additional code must be input if you want that client to have write access to the disk; otherwise, it can only read files. An icon sits in the Windows System Tray and provides access to the limited number of settings.

The default file system is NTFS and this boosted transfer rates to around 10MB/s over 10/100 Ethernet, noticeably quicker than the

LaCie, which uses FAT32. However, you'll have to format the disk to FAT32 if you want to use the SL with Max OS X – and you can expect speeds to drop in line with that of the LaCie drive. Over the USB 2 interface, we saw write speeds increase to 21MB/s and read speeds to a shade under 18MB/s.

As there are no Type A USB ports, you can't connect any printers, hard disks or flash drives to the Freecom and, naturally, it doesn't have a print server. There's no FTP server either, and while you can create individual user accounts to restrict access to shares, you can't set up groups. You can't set the appliance to power up or down at particular times either, but it will hibernate after around 10 minutes of inactivity and it supports hidden files.

The appliance is no bigger than most external hard disks, and is the smallest, most portable one on test. Producing only 28dBA when idling, you're unlikely to notice it's even switched on. If the dual interfaces are appealing to you and you don't need print or FTP servers, the 160GB Classic SL is a sensible choice. Just note the LaCie is cheaper per gigabyte when taking into account the \$81 European postage, but the Freecom offers better performance.



LABS VERDICT

Very affordable and offers both Ethernet and USB interfaces for transfers. However, it lacks NAS features such as acting as a print or FTP.

Performance	★★★★★
Features & Design	★★★★★
Value	★★★★★

OVERALL ★★★★★

Iomega NAS 100d 250GB

PRICE: \$683

SUPPLIER: www.iomega.com

Iomega's boxy NAS 100d is aimed more at small businesses than home users, partly evidenced by its client support, which includes Windows, Mac, Linux and Unix. But this alone doesn't justify the high cost, especially when other 250GB NAS appliances are less than half the 100d's price.

One feature that's unique is the 802.11g Wi-Fi interface. It means you can put the 100d virtually anywhere – there's no need to be in close proximity to a router or Ethernet port. However, the 100d lacks WPA authentication and Wi-Fi

certification, which means it may not work reliably with your existing Wi-Fi kit. Our other main problem with the 100d is the noisy front-mounted fan. It registered almost 42dBA when idle and even covered up any disk-seek noises, since there was no noticeable increase when we forced a disk search. This won't be such a problem in an air-conditioned office, but it could prove irritating in a quiet environment.

Initial setup isn't the simplest – the setup guide advises users whose network lacks a DHCP server to reconfigure their computer's IP addresses to match that of the 100d. The web browser management interface is easy to use, though, and includes a Help section. What we didn't appreciate was the lack of a reboot confirmation when we made certain changes – each reboot takes upwards of 60 seconds.

NAS features aren't hugely comprehensive. There's a print server and you can attach external USB hard disks or flash drives to increase storage, but there's no FTP server, no timed power-down and no way of creating password-protected shares. Where Iomega draws you away from its rivals is its Automatic Backup client software. You can install this on as many clients as you like, making it easy to back up data without requiring users to do it manually or buying third-party software.

LEDs on the front panel show you when the 100d is starting, running or being accessed and when the disk is full. The power switch is on the rear rather than the front, and the PSU is external, despite the size of the unit. Performance over 10/100 Ethernet was fairly good – 5.9MB/s when writing and 6.6MB/s when reading. Transfer rates were understandably slower over the wireless interface; we saw only 1.8MB/s when writing and 1.4MB/s when reading.

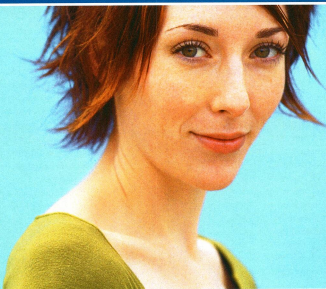
Considering the high price (plus \$423 shipping and import duties), noise and lack of data security, the 100d simply can't compete in this Labs. Only consider it if you need Wi-Fi support and automated backups.

LABS VERDICT

The 100d supports a wide range of operating systems and has Wi-Fi, but lacks an FTP server and is noisy. It wins for automated backup but loses on price.

Performance	★★★★★
Features & Design	★★★★★
Value	★★★★★

OVERALL ★★★★★



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LaCie Ethernet Disk mini

PRICE: \$395

SUPPLIER: www.streetwise.com.au

Easily the most stylish appliance on test, the LaCie's minimalist aluminium design won't be an eyesore wherever you choose to install it. At the front, the power button lights up blue and subtly flashes whenever the disk is accessed.

The rear panel is almost as bare, with just the obligatory 10/100 Ethernet socket and a Type B USB port. The Ethernet Disk mini can either be used as a NAS appliance or directly connected to a USB 2 port for fast local storage – a similar setup to the Freemom.

As there are no Type A USB ports, the LaCie suffers in the features department, just like the Freemom. It means there's no print server and, since you can't connect additional disks, you're stuck with the 250GB capacity and can't back up the disk's data directly.

Thankfully, LaCie has included an FTP server function, unlike Freemom, which means you'll be able to access your files remotely. Through the easy-to-navigate web management browser, you can

create user accounts but not groups. A nice touch is that data security is retained when the disk is connected via USB – you can't view any of the shares until you've logged on.

Furthermore, the appliance will automatically power up when connected via USB and you turn on your computer, and power down when you shut down the computer.

Initial setup isn't particularly easy, though. No software is bundled to find the appliance on a network, and the quick-start guide doesn't include basic information such as the default IP address, username or password. We also found the web management pages slow to load compared to others.

Out of the box, the unit is formatted to FAT32, which allows it to support Windows, Mac, and Linux clients. Unfortunately, it also hampers performance – over the network, we found read and write speeds to be the slowest here at around 3MB/s. USB transfer

rates were much better, writing and reading at 16MB/s and 18MB/s respectively.

A small fan at the rear means the LaCie is slightly noisier than some – you'll hear a hum over the background noise in a quiet room, since it registered 31.8dBA from the front when idle. Fortunately, search noises weren't much louder, adding less than a decibel.

With an external PSU and a warranty that's nothing out of the ordinary, the LaCie's main attraction is value. Per gigabyte, it's the most affordable here at \$1.64, so if you can live with the lack of NAS features and slow network transfer speeds, it's something of a bargain.



LABS VERDICT

Stylish and good value for the storage on offer. You can connect it via USB, but it lacks NAS features and isn't quick to transfer files over its Ethernet interface.

Performance	★★★★★
Features & Design	★★★★★
Value	★★★★★

OVERALL ★★★★★

Linksys EtherFast EFG250

PRICE: \$1298

SUPPLIER: www.pc.net.au

As the most expensive NAS appliance on test, the Linksys clearly isn't aimed at cost-conscious home users. Instead, the EFG250 is suited to small businesses that are more concerned about backing up the data stored on the NAS disk and having plenty of features.

The EFG250 is the largest appliance here, housing two 3.5in drive bays with lockable and removable trays. The unit is shipped with a single Maxtor MaxLine II 250GB Ultra ATA/133 disk – the other tray is empty.

This means it's simple to add another Ultra ATA disk (up to 300GB) in the future, either for extra storage or backing up the first disk. You can buy extra trays, but it's worth noting that these aren't hot-swap bays. There's no RAID support either – a slight disappointment at this price.

Also, unlike higher-end appliances, there's no redundant PSU or Ethernet

socket – the EFG250 has a similar external power brick to others on test. At least the Ethernet port is a Gigabit one, leading to better transfer rates than most. We saw almost 11MB/s when writing

and 9.3MB/s when reading. This is still slower than Gigabit Ethernet is capable of, but it's noticeably quicker than others on test when transferring files.

Although there's an integrated print server, there's only a parallel port on the rear. It's good to see an FTP server, though, and you can set the EFG250 to be an Internet print server, allowing others to print pages from anywhere.

You get plenty of other features for your money too. User and group accounts can be created and you can set quota limits. Email alerts may be configured to send a message upon certain conditions, such as the disks being full. In addition, it's possible to remotely perform disk checks, format the disks and set when you want the appliance to turn on and off each

day. Installation is simple – the bundled utility searches your network and then lets you configure the basic settings. The only annoyance is that the default username and password aren't mentioned anywhere in the quick-setup guide.

Apart from the absent USB ports, the EFG250's main weakness is noise. The unit measured almost 43dBA when idle, and this shot up to almost 46dBA when the disk was searching. This won't be an issue in noisy offices, but it's worth bearing in mind if you like peace and quiet.

If the lack of USB support isn't a problem for you, the Linksys is a decent choice where backup and data security are priorities.



LABS VERDICT

Plenty of features including Gigabit Ethernet and two removable drive trays. The EFG250 is ideal where backup and security are crucial, but it isn't the cheapest or the quietest.

Performance	★★★★★
Features & Design	★★★★★
Value	★★★★★

OVERALL ★★★★★

Maxtor Shared Storage Drive

PRICE: \$475

DELIVERY: www.i-tech.com.au

Looking almost identical to the OneTouch II (July 2005, page 88), Maxtor's Shared Storage Drive is simply a little longer. It comes with the same plastic stand, allowing you to mount it on its edge for a minimal footprint. Naturally, the real difference between the two is the Ethernet socket and Broadcom chip that turn it into a NAS appliance. Plus, you get two USB 2 ports, so you could hook up an existing OneTouch II to add capacity should the current 300GB prove inadequate.

You can use the remaining USB port for a printer, enabling anyone on your network to print even if no other computers are turned on. However, the major features essentially end there – there's no FTP server (a turn-off for many) and only Windows clients are supported.

Fortunately, it's a breeze to set up. You simply install a small application from the CD and it will search for any Shared Storage Drives, reconfigure their IP addresses to match your network and even place a shortcut on your Desktop.

The web management interface is well designed but a little oversimplified. No

backup software is provided, unlike the Iomega, and there are no controls for backing up the disk's contents onto an external disk. Adding user and group accounts is possible, but you can't tell the unit what times to switch on or off. However, the disk will hibernate if it isn't used for a while, saving power and reducing noise. Not that noise is a problem; in our tests, we measured the Maxtor at just 27.3dBA when idle. When searching, you can hear some clicking, but it still isn't a big distraction at under 30dBA.

A neat feature that no other appliance offers is Drag and Sort. Instead of having to manually copy files into folders on the appliance, you can simply drag an assortment onto the drive's icon on your Desktop – a shortcut to your private share on the disk. More than 100 file types are supported and automatically dropped into

the appropriate music, photo, video or documents folder on the disk, so MP3s will appear in My Music, while DOC files go into My Documents.

Compared to the Buffalo, the Maxtor doesn't tick enough boxes, not least support for clients other than Windows. But considering the Shared Storage Drive offers 300GB for under \$500, it's good value if you only have Windows machines and don't need an FTP server.



LABS VERDICT

Limited to Windows PCs and lacking an FTP server, the Maxtor won't appeal to everyone. But it's good value for the amount of storage on offer.

Performance	★★★★☆
Features & Design	★★★★★
Value	★★★★★

OVERALL ★★★★★



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FEATURE TABLE

	Adaptec Snap Server 1000	Buffalo LinkStation HS-R250LAN	Firestorm Classic SL Network Drive	Ironmap MAS 9000 R2500B	LaCie Ethernet Disk mini	Linksys EtherFast EF6250	Master Shared Storage Drive	Synology Disk Station 010*
OVERALL RATING	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Price	\$706	\$306	\$306	\$683	\$395	\$298	\$475	\$538
Price of delivery	\$5	Free	\$8	\$423	\$15	\$5	\$15	\$7 to \$22
Supplier's website	www.adaptec.com.au	www.buffalolinkstation.net.au	www.firestorm.com	www.ironmap.com	www.lacie.com/au	www.pcnet.au	www.tech.com.au	www.compucon.com.au
Manufacturer's website	www.adaptec.com.au	www.buffalolinkstation.net.au	www.firestorm.com	www.ironmap.com	www.lacie.com/au	www.pcnet.au	www.tech.com.au	www.compucon.com.au
Basic warranty	1yr RFB	2yrs RFB	2yrs RFB	2yrs RFB	2yrs RFB	2yrs RFB	2yrs RFB	1yr RFB
MAIN FEATURES								
Capacity	160GB	250GB	160GB	250GB	250GB	250GB	300GB	160GB
Speed and buffer	Not stated	7200rpm, 8MB	7200rpm, 2MB	7200rpm, 8MB	7200rpm, 8MB	7200rpm, 8MB	7200rpm, 8MB	7200rpm, 8MB
Default file system	SnapOS	EXT3	NTFS	NTFS	HFS+	EXT3	HFS+	Linux-based
Network protocols	TCP/IP, iPPPoE, AppleTalk, 2, IPv6	TCP/IP, AppleTalk, SMB	NAS	TCP/IP, AppleTalk	TCP/IP, AppleTalk	TCP/IP	TCP/IP	TCP/IP, AppleTalk
Operating systems supported	Windows NT 4, 98 SE, ME, 2000, XP Mac OS 8.x, 9.x, 10.x, 10.2, 10.3, 10.4, 10.5, 10.6 Solaris 2.6, 2.7, 2.8, 2.9, 3.0, 3.1, 3.2, Novell 3.12	Windows 98 SE, ME, 2000, XP	Windows 98 SE, ME, 2000, XP Mac OS 9.2+	Windows 98 SE, ME, 2000, XP Mac OS 9.2+, 10.x, 10.2, 10.3, 10.4, 10.5, 10.6	Windows 98 SE, ME, 2000, XP Mac OS 9.x, 10.x, 10.2, 10.3, 10.4, 10.5, 10.6	Windows 98 SE, ME, 2000, XP	Windows 98 SE, ME, 2000, XP	Windows NT 4, 98 SE, ME, 2000, XP Mac OS 8.x, 9.x, 10.x
FUNCTIONS								
USB support	N/A	Printers ² , hard disk	USB port for direct connection to a PC	Printers ² , USB flash drive, hard disk	USB port for direct connection to a PC	N/A	Printers ² , USB flash drive, hard disk	Printers ² , USB flash drive, hard disk, camera, digital camcorder
Print server	✓	✓	✓	✓	✓	✓	✓	✓
FTP server	✓	✓	✓	✓	✓	✓	✓	✓
User quotas	✓	✓	✓	✓	✓	✓	✓	✓
Hidden file support	✓	✓	✓	✓	✓	✓	✓	✓
Managed backups	✓	✓	✓	✓	✓	✓	✓	✓
Timed power-on/startup	✓	✓	✓	✓	✓	✓	✓	✓
Hibernation on file	✓	✓	✓	✓	✓	✓	✓	✓
Other	✓	Media server	✓	✓	✓	✓	✓	Media server, web server
PHYSICAL								
Ethernet ports	1 x 10/100	1 x 10/100	1 x 10/100	1 x 10/100	1 x 10/100	1 x 10/100	1 x 10/100	1 x 10/100/1000
USB ports	2 x USB 2	2 x USB 2	1 x USB 2	1 x USB 2	6	2 x USB 2	3 x USB 2	6
Other ports	✓	✓	✓	✓	✓	✓	✓	4x SATA
Power switch	✓	✓	✓	✓	✓	✓	✓	✓
Front indicators	System link, act, disk	Power, link, disk, full, error, warning	Power, link, disk, full, error, warning	Power, link, disk, full, error, warning	Power, link, disk, full, error, warning	Power, link, disk, full, error, warning	Power, link, disk, full, error, warning	Power, status, access, LAN
Dimensions (WxHxD, mm)	128 x 220 x 78	60 x 105 x 114	15 x 72 x 34	100 x 200 x 94	58 x 168 x 180	98 x 256 x 325	70 x 270 x 140	60 x 181 x 212
Upgradable capacity	✓	✓	✓	✓	✓	✓	✓	✓
SECURITY								
Physical	✓	✓	✓	✓	✓	✓	✓	✓
Account	✓	✓	✓	✓	✓	✓	✓	✓
Groups	✓	✓	✓	✓	✓	✓	✓	✓
Email alerts	✓	✓	✓	✓	✓	✓	✓	✓
CABLES & SOFTWARE								
Cables	Ethernet cable	Ethernet cable	Ethernet cable, USB cable	Ethernet cable	Ethernet cable, USB cable	Ethernet cable	Ethernet cable	Ethernet cable
Power	Internal PSU	Internal PSU	Internal PSU	Internal PSU	Internal PSU	Internal PSU	Internal PSU	Internal PSU
Software	SnapOS 4	LinkNavigator 3	Network Drive Software 3	Ironmap Automatic Backup (optional client licenses)	Setup Wizard	Quick Start Software	Disk Station Assistant	Disk Station Assistant

* Prices were correct at time of going to press. **2** May increase for remote. **Outback** locations. **3** Doesn't support bidirectional communication.

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/ VITAL PERIPHERAL SUPPLIES 02-9905 8707

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BACKUP SUPERGUIDE

Essential software

We look at eight affordable backup applications to protect your valuable data in case of disk failure.

What price would you place on the files on your hard disk? It's a question most people only have to answer when faced with a broken disk and a quote for over a thousand dollars from a data recovery firm. Even if you've never been faced with this nightmare scenario, if you've been fortunate enough to never lose any important documents, you're part of an increasingly rare minority. The fact is that most of us have accidentally deleted files or been faced with the sickening sound of a broken hard disk and have lost all the data on it, and unless you're prepared, you'll be looking at a costly solution.

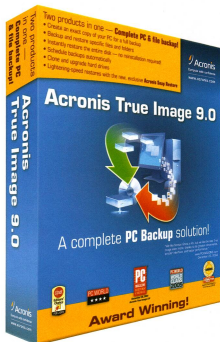
And these days, there are more and more valuable data that we risk losing. There was a time when photo and music collections, financial records and letters were all physical items, but now they're created and stored digitally on hard disks. Businesses rely on hard disks for client account files, contact details, invoices, tax records and product catalogues. Losing them is nothing short of catastrophic.

Yet we continue to rely on these mechanical, magnetic devices to keep our valuable data safe, ignoring the fact that they can fail like any other component. As it's so simple to make backup copies of this data, it's a wonder that we rarely bother. Excuses are easy to make, but the most common reason is just plain laziness.

And that's where this month's selection of backup applications comes in. There are a vast number of utilities available that will back up your vital files with minimal effort on your part.

Over the next six pages, we look at eight backup utilities, all of which can be scheduled to back up files automatically, even when you're not logged on and present at the PC.

Some applications extend to hard disk imaging and even complete system recovery. They can all back up to internal and external hard disks, tape drives, CDs and DVDs. The Labs-winning Acronis True Image even offers the option of backing up to a hidden partition on your main hard disk to protect files from viruses.



Most of the applications allow you to make three kinds of backup. The first is an initial full backup of all your files. The second is an incremental backup that saves only the files that have changed since the

FEATURE TABLE



	Acronis True Image 9	Centered Systems Second Copy 1.7	CyberLink PowerBackup 2	EMC Dantz Retrospect 7 Professional	FileStream TurbBackup 5	NovaStar NovaBackup 7.3
OVERALL RATING	★★★★★	★★★★☆	★★★★☆	★★★★★	★★★★☆	★★★★☆
Price	\$70	\$42	\$56	\$199 with 2 client licences	\$75	US\$70 (\$95)
Volume cost	X	5 users, \$34; 100 users, \$17	5 users, \$25; 10 users, \$405	1 client, \$59; 5 clients, \$225	X	X
Supplier's website	www.acronis.com	www.centered.com	www.cyberlink.com	www.harrisistechology.com.au	www.downbackpipe.com.au	www.novastar.com
FEATURES						
Scheduled backups	✓	✓	✓	✓	✓	✓
Incremental/differential	✓/✓	✓/X	✓/✓	✓/✓	✓/X	✓/✓
Archive verification	✓	✓	✓	✓	X	✓
Archive browsing	✓	✓	✓	✓	✓	✓
Compression	✓	✓	✓	✓	✓	✓
Password protection	✓	✓	✓	✓	✓	✓
Advanced encryption	X	✓	X	✓	X	X
System recovery	✓	X	X	✓	Only with Windows Backup Utility installed	✓
Media supported	Local & network hard disks; Zip, Jaz, MO, FireWire, USB, PC card devices; CD-R/RW, DVD-R/RW, DVD-RW	Local & network hard disks; Zip, Jaz, FireWire, USB, PC card devices; CD-R/RW, DVD-R/RW, DVD-RW	Local & network hard disks; Zip, Jaz, MO, FireWire, USB, PC card devices; CD-R/RW, DVD-R/RW, DVD-R/RW, DVD-RAM	Local & network hard disks; Zip, Jaz, MO, FireWire, USB, PC card devices; CD-R/RW, DVD-R/RW, DVD-RW	Local & network hard disks; Zip, Jaz, MO, FireWire, USB, PC card devices; CD-R/RW, DVD-R/RW, DVD-RW	Local & network hard disks; Zip, Jaz, MO, FireWire, USB, PC card devices; CD-R/RW, DVD-R/RW, DVD-RW, DVD-RAM
Span multiple discs	✓	✓	✓	✓	✓	✓
Requires third-party CD/DVD software	✓	X	X	X	X	X
Can run in service mode	✓	✓	X	✓	✓	✓
OPERATING SYSTEM SUPPORT						
Windows 2000/XP	✓/✓	✓/✓	✓/✓	✓/✓	✓/✓	✓/✓
Windows 98/98 SE/ME	✓/✓/✓	✓/✓/✓	X/✓/✓	✓/✓/✓	✓/✓/✓	X/✓/✓
Windows 95/NT 4	X/✓	✓/✓	X/✓	X/✓	X/✓	X/✓

full backup, or the last incremental backup. It's worth bearing in mind that if several incremental backups are made, they must all be kept, as each one is dependent on the previous one for when you need to restore files. The third type is a differential backup. This saves all files that have changed since the last full backup, so – unlike incremental backups – only the differential and the original full archive need to be kept to allow restoration.

Incremental and differential, both have their advantages. Each differential archive renders the last unnecessary – only one is required at any time, so the process uses less disk space. Meanwhile, the many incremental archives act as restore points, allowing you to recover your files to the time of any individual archive's creation. Not all of these packages support both, so consider your needs before you decide.

Prices vary widely, so it's worth deciding if you need system recovery and disk imaging, since basic apps tend to cost less.

We're focusing here on individual users and small offices, so we've mentioned in the reviews where applications have licence options for multiple PCs. As Windows XP has a built-in backup utility, we also see how it shapes up to the competition. Plus, we investigate how it will change once Vista arrives. Read on to find out which backup software you can bank on to keep your files safe,
David Bayon

How we test

Unlike many security utilities, it's not only tricky but also irrelevant to performance test backup software. The results may tell you how fast a particular program backed up to a particular device on our test rig, but it means little in the real world. All of these tasks can be scheduled to run in the background, and speed is far less important than features and reliability.

However, we found that data rates varied widely between applications when we backed up files to our test external hard disk. This is why we've included the graph below to give a relative comparison between them.

Our test methodology involves creating a 2.5GB collection of office, music, video and data files. We back this up and restore it multiple times using a variety of media. Although we measure data rates to and from a 250GB Maxtor USB hard disk, the test is designed to find out how simple each program is to configure and use, and how well it did the job. We set scheduled backups to test reliability, and the resulting archives are thoroughly examined for inconsistencies.

Where compression is available, we test each level. We found that in all cases, the maximum compression level produced a similar resulting file size – the number of levels and types of compression are more useful differentiators. Bear in mind compression can temporarily require almost the same amount of free space on your source disk as the data you're compressing, so it's only really suitable for systems with ample source space and limited destination space.

The final important test was backing up to CD and DVD. We examined each package's ability to automatically span multiple discs of all formats, and whether burning software is built-in or reliant on a third-party application.

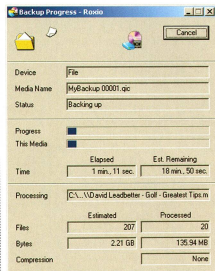
How we work out the ratings

At the bottom of each review are four ratings: Ease of Use, Features, Value for Money and Overall. The Ease of Use rating is determined by a hands-on evaluation of factors such as installation and configuration, wizards and automation, system settings, plus the quality of the help files and support.

Many features are essential, such as scheduling, incremental backups, compression and archive browsing. But we also reward features that go above and beyond: differing encryption types; archive verification; email and application integration; the capacity to create archives in formats readable without the backup software; service-mode support. We also look at the range of media supported by each program, and several packages earn extra points for including full system recovery and drive-imaging options.

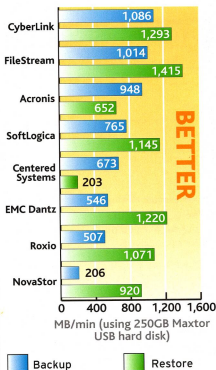
The Value for Money rating is based on

a combination of the Ease of Use and Features ratings, while we factor in the cost of each package for a bang-per-buck result. The Overall score is a straight average of the other three, and the Labs Winner award goes to the product with the highest Overall score.



▲ We back up and restore 2.5GB of files to different media to test each app.

Average Data Rates



Roxio Backup MyPC Deluxe 6	SoftLogica Backup Platinum 2
★★★★★	★★★★★
\$75	\$91
5 users, \$360	10-24 users, \$14 per user
www.citysoftware.com.au	www.sbssoftware.com
✓	✓
✓/✓	✓/✓
✓	✓
✓	✓
✓	✓
✓	✓
✓	✓
Local & network hard disks; Zip, Jaz, MO, FireWire, USB, PC Card devices; CD-R/RW, DVD-R/RW, DVD-R/RW, DVD-RAM	Local & network hard disks; Zip, Jaz, MO, FireWire, USB, PC Card devices; CD-R/RW, DVD-R/RW, DVD-R/RW
✓	✓
✓	✓
✓	✓
✓/✓	✓/✓
✓/✓	✓/✓
✓/✓	✓/✓

Twice a winner

Acronis True Image 9

PRICE: \$70

SUPPLIER: www.acronis.com



The name 'True Image' is a tad misleading. This software is far more than a disk-imaging product, as it showed when we pitched it head-on against Norton Ghost (March 2005, page 70). That showing was enough to win Acronis a Recommended award, but this month it goes still further by defeating specialist backup software in our group test.

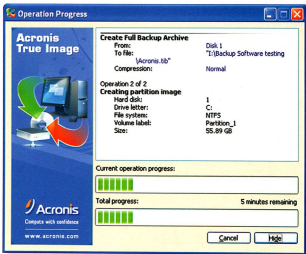
The latest version has already shown Norton Ghost how the job should be done and here it fully justifies the Labs Winner accolade as a file backup tool as well. The True Image 9 interface bears more than a passing resemblance to the Windows XP Control Panel, which, with the help of the numerous wizards, makes it easier to come to grips with what can be complex procedures for creating backups.

The Backup Wizard offers both incremental and differential options. The standard tweaks are all present; you can apply basic password protection to your backup, for example, and there are three levels of compression to choose from. Less common this month is the option to adjust the backup task's thread priority to

► True Image offers both incremental and differential backups.

you can enter the admin account's username and password and run the software as a background service. This is vital in a multi-user environment, as the administrator doesn't have to be logged on to Windows for the scheduled backups to run.

Our only gripe is that True Image is one of just two packages on test – the other being Centered System's Second Copy – to require third-party packet-writing software in order to back up to CD or DVD. As this software is provided as standard with most PCs, it's a minor issue. As you'd expect, you can back up to local and network hard disks, FireWire and



system can be surprisingly functional in a very short time.

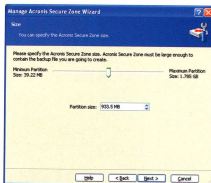
Back in Windows, the Restore Wizard takes you easily through the process of restoring files using a standard folder tree. Full drive images can also be 'plugged' (assigned a temporary drive letter), allowing the contents to be accessed like a normal, read-only, disk.

The wizard approach extends to even the smaller tasks, such as checking an archive for errors. Control over Windows System Restore is integrated into the software, so you can have full protection with file and folder backup, System Restore on all drives, recovery discs and the startup recovery manager, all through one interface. It's hard to see how backing up your system could be made much simpler.

Once you understand what each menu option is for, Acronis True Image 9 is an easy piece of software to use, and offers power and reliability, which are vital in a backup utility.

It has its weaknesses, particularly the lack of any advanced encryption for your archives, but no package this month is perfect. It's competitively priced and, although not the best choice for those with multiple PCs to back up, its comprehensive capabilities make it our pick for individual users.

'The interface resembles the Windows XP Control Panel, which makes it easier to get to grips with what can be complex procedures.'



▲ The unique Secure Zone will protect your data if you don't have external storage options.

prevent it from hogging system resources, as well as support for pre- and post-backup commands to run maintenance tasks.

Our test backup averaged 948MB/min, which puts it among the fastest this month. Like EMC Dantz Retrospect 7, it can back up open files for minimum disruption of your day. The Backup Task Scheduler worked flawlessly even when we weren't logged in;

USB devices, magneto-optical, Iomega Zip and Jaz drives without any extra software.

Uniquely this month, True Image also offers another backup location: the Acronis Secure Zone. This is a hidden partition on your hard disk, which stores the backup out of reach of viruses and other malicious software. It guarantees your data will be restorable should your critical operating system files become corrupted, although it obviously won't withstand mechanical disk failure. It's a useful and reliable option for those without access to external storage, although be warned the software can fully manipulate the size of partitions on your disk.

Activating the Startup Recovery Manager allows you to boot directly into a full Linux-based version of the software by pressing F11, so no recovery discs are needed. The utility will then attempt to restore the system from any local or network image. You can then make use of the Snap Restore feature, which allows you to begin using your system in seconds while the image is still being restored. If you attempt to use an application that hasn't fully restored, it will make that restoration a priority, which means your

LABS VERDICT

Offering file backup, system restore and some unique features like the Secure Zone, there's no better-value package for backing up a single PC.

Performance	★★★★★
Features & Design	★★★★★
Value	★★★★★

OVERALL ★★★★★

Centered Systems Second Copy 7

PRICE: \$42

SUPPLIER: www.centered.com

Among the all-encompassing utilities from the big names this month sits Second Copy 7 – a shareware offering from US-based Centered Systems. It's a bare-looking program, completely at the other end of the scale from the cluttered menus and graphical interfaces of some of the competition.

After installation, an icon appears in the System Tray to let you know it's running in Service mode. Opening the interface for the first time, you're greeted by an almost blank window, which remains blank until you create your first backup Profile.

Profiles are the essence of how Second Copy works. You can create a wide range of backup Profiles for different groups of files and folders and run them as and when necessary. It's a minimalist but effective process. Most people won't need more than the Express Profile Wizard to choose the source and destination for their backups, while experienced users can access the advanced options, which often only present themselves when you select certain choices in the Custom Profile Wizard menus.

Like Dantz Retrospect, Second Copy offers 256-bit AES encryption to protect your archives, and there's a sliding scale to choose the level of compression before creating a Zip file. This is extractable using any standard Zip utility and means you won't need Second Copy installed to restore the files. You can also choose to make copies of the files, which won't even create an archive, so individual files can be accessed with ease.

It isn't all good news, though, as performance in our tests wasn't great. An average backup data rate of 673MB/min is well off the pace, as is the restore rate of 203MB/min. However, Second Copy

is essentially a backup-only utility; you'll see better performance if you unzip and restore files manually. Other nice features include the ability to change the backup thread priority to minimise system slowdown, and an option to verify that an archive's files are the latest versions. Also, pre- and post-backup commands can be entered to run maintenance programs with your backup. CD and DVD backups are offered, but, as with Acronis, they require third-party burning software in order to function.

The features are all fairly easy to use once you work out where they are, and the price is appropriate considering this is shareware. You can set up your profiles and essentially forget about it. If budget is your focus, then it makes a good choice.



LABS VERDICT

More features than you'd expect for the price, but performance issues limit its appeal.

Performance	★★★★☆
Features & Design	★★★★☆
Value	★★★★☆

OVERALL

★★★★☆

CyberLink PowerBackup 2

PRICE: \$56

SUPPLIER: www.cyberlink.com

Given CyberLink's range of multimedia software, it's no surprise that PowerBackup 2 has a similar feel to many media-burning programs. Rather than the straightforward wizard approach of most rivals, PowerBackup 2 uses a standard Explorer-style window with points of instruction in a tab down the left side. As you click on each step, an instruction is displayed so you're never left wondering what's required next.

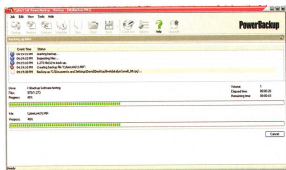
To make a backup, you simply tick the required files and folders in the Explorer window or, as a useful alternative, choose to back up data used by applications like Outlook and Internet Explorer. You then specify a destination; PowerBackup is one of three apps to support DVD-RAM media. Interestingly, you can tick a box to include the Restore Tool in your archive: this adds an executable that contains everything necessary to restore the full archive without needing PowerBackup to be installed.

Both incremental and differential backups are supported for maximum flexibility and, naturally, you can compress your archives. Basic password protection and archive verification are possible, and file-exclusion filters mean you

only need to back up relevant files. Backup performance was superb, with an average data rate of more than 1GB/min making it the quickest on test.

The restore process is also simple using a folder tree should you need to find individual files. An average restoration speed of nearly 1.3GB/min is also excellent, with only the FileStream software being quicker. Finally, the Compare tool can automatically check an archive against the original files to see which have been updated since it was created. The scheduler allows you to back up daily, weekly or monthly at any time of day.

However, PowerBackup 2 is aimed firmly at the individual, and there are no options to run in service mode while other users are logged on. Unlike more powerful and discreet packages such as True Image, the whole utility loads up when the scheduled time arrives, which can be annoying. Lastly, there are no system-recovery tools. The basic features are all present, but as you'd expect at such a low price there's little in the way of extras. As it's more of a home-focused product, its odd that there are



volume licensing deals: five copies will cost \$45 each, falling to \$40 if you buy 10.

Overall, PowerBackup 2 can't compete with the offerings from Acronis and Dantz for power, but if you're looking solely for personal file and folder backup this is a fine package at a reasonable price.

LABS VERDICT

Offers all the basic backup features you'd want and supports DVD-RAM, and we also like the price. Consider Roxio's alternative before you buy though.

Performance	★★★★☆
Features & Design	★★★★☆
Value	★★★★☆

OVERALL

★★★★☆

EMC Dantz Retrospect 7 Professional

PRICE: \$199 with two client licences

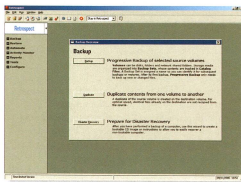
SUPPLIER: www.harristechnology.com.au

While Acronis True Image 9 may take the crown for individual PC backups, EMC Dantz Retrospect 7 Professional offers superb value for multiple-PC environments.

The \$199 price tag includes two client licences for use on two other PCs or notebooks. This works out at \$66 per PC, while an extra five licences from the EMC Dantz website will cost you just \$38 each.

Using the Backup Wizard is simple as long as you don't require the advanced options. If you do, you'll have to wade through the many menus. Backup options are comprehensive, with differential and incremental backups available, plus support for open-file backup—in other words, Retrospect can back up your documents even if you're currently working on them.

Just one level of compression is available, but Retrospect's security is excellent, supporting the Advanced Encryption Standard of up to 256 bits. All major media types except DVD-RAM are supported, although if you plan to back up to DVD you must initially go through the process of configuring the software for each disc format you plan to use. This runs tests that write data to the disc, so it's advisable



to have a rewritable DVD at hand.

Unlike the other apps on test, Retrospect creates a Snapshot of the source disk before each backup. It then compares this with the files in the last backup set to find duplicates that it then skips. This alternate method contributed to a poor backup data rate of just 546MB/min on our test drive, but it did achieve a fast 1.22GB/min when restoring.

A Disaster Recovery boot disk option is present, but the powerful client system is Retrospect's main selling point. It allows Windows, Unix or Mac clients to be backed

up remotely to shared storage locations. Tasks can be scheduled or run manually, and the main backup PC has access to each client's backup preferences and its own.

EMC Dantz Retrospect 7 Professional is a powerful and comprehensive piece of software. For network backups, nothing can rival it. It can also be enhanced for extra cost through a large range of add-ons, such as additional file-type support for open-file backup. But the interface is by no means user-friendly, and if you're not familiar with the many backup terminologies, you may find it difficult to make the most of the many options.

LABS VERDICT

Offers superb value for backing up multiple PCs, but the sheer range and complexity of options mean it's better suited to the more knowledgeable business user.

Performance

Features & Design

Value



OVERALL



Back up for free

If you use Windows XP Professional, you may be unaware of its Backup Utility, which offers many of the features available in the applications on test this month. If you have XP Home, you can also install it manually by running the ntbackup.msi installer in the VALUEADD\MSFT\NTBACKUP folder on your installation CD.

The first thing you may notice is the uncanny resemblance to several of the

commercial utilities this month. You can choose files and folders to back up or the whole hard disk. There are incremental and differential backups on offer, while compression, scheduled backups and archive verification are also all present.

Performance was solid in our tests: an average backup data rate of 962MB/min put it among the fastest packages in this respect, but a restore rate of 932MB/min leaves it behind all but the two slowest utilities on test.

Professional bonus

The advantage for Professional users comes in the form of the Automated System Recovery option, which creates a recovery boot disk and system partition backup. Home users can configure this option, but only in Professional can the recovery itself be run all the way through effectively giving users of the latter a full disaster-recovery utility for free.

However, we're still recommending you pay money for backup software, because the Windows

Backup Utility has its weaknesses. We found the scheduler was temperamental, sometimes ignoring the tasks we set. While hard disks, tape and Zip drives are all supported, the utility won't back up to CD or DVD. Plus, the recovery boot disk can only be created on a floppy and there's no option to password-protect your archives.

Backup in Vista

When Vista finally arrives, it will feature an updated backup app, which currently goes by the name SafeDocs. From what we've seen, it's more user-friendly and all-encompassing than the XP version, and is aimed primarily at home and small-business users.

It backs up files to a range of media including CDs and DVDs. Automation appears to have been a priority, mainly to encourage making backups, and it could mean that many of the packages on test will largely be redundant.

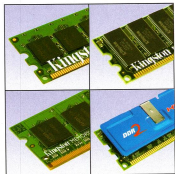
Vista isn't available yet, though, and the current Backup Utility is very basic in comparison to commercial releases. Ultimately, if you're serious about data protection, the features and reliability of our award winners are worth the outlay.



▲ The Windows Backup Utility is included on every XP installation CD.



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FileStream TurboBackup 5

PRICE: \$75

SUPPLIER: www.downloadpipe.com.au

Not all backup software aims to do everything, and this offering from US-based FileStream is more interested in protecting your chosen files than recovering the whole OS. While it succeeds in many ways, TurboBackup 5 doesn't quite have the ease of use to make it stand out.

Upon opening for the first time, the Backup Wizard automatically runs, giving you the usual file trees for you to choose what to back up. Interestingly, TurboBackup gives you two compression options: if you compress to a standard Zip file, it can be opened without TurboBackup but won't contain any drive or partition details; compress to a backup file and you'll need the software to open it, but the partition information remains intact.

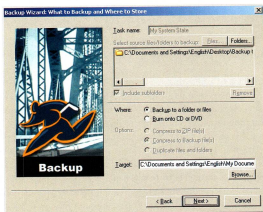
A problem arises if your first time, the Backup Wizard automatically runs, giving you the usual file trees for you to choose what to back up. Interestingly, TurboBackup gives you two compression options: if you compress to a standard Zip file, it can be opened without TurboBackup but won't contain any drive or partition details; compress to a backup file and you'll need the software to open it, but the partition information remains intact.

The scheduler is comprehensive, offering hourly, daily, weekly, monthly or one-off tasks and even backups at specified minute intervals if you need that level of precision.

Rotating incremental backups are supported, so you could increment two sets on alternate days, but the wording of this and other options is confusing. For example, with an option here for 'incremental backup' next to an option for 'daily backup', it isn't immediately clear what the difference is, so you may find yourself wading through the detailed Help files. Lastly, there's no support for differential backups, a limitation compared to other apps on test.

Backups will run with no user input, though, and can be stored on most available DVD formats, the exception being DVD-RAM. Scheduled tasks will run without the owner logged – useful for multi-user environments – although TurboBackup only offers basic password protection and there's no option to verify the integrity of an archive.

A nice inclusion is a quick backup bar on the left side of the main screen. With templates for backing up Favorites, Outlook files, Windows settings and the My Documents folder, it makes basic backups extremely simple. There's an option to back up the system state, which piggybacks on the Windows Backup



Utility (if present) to offer system recovery.

Overall, Turbo Backup offers some useful options. But at this price, it falls too close to the better-featured Acronis True Image 9 for us to recommend it.

LABS VERDICT

The quick backup menu is a nice touch, but TurboBackup can't compete with the best.

Performance	★★★★★
Features & Design	★★★★★
Value	★★★★★

OVERALL ★★★★★

NovaStor NovaBACKUP 7.3

PRICE: US\$70 (\$95)

SUPPLIER: www.novastor.com

This utility from US-based NovaStor is one of the more feature-rich of the group. It starts well at installation, as you're asked to enter the administrator account details before you can continue.

You can default to the local account to make things as simple as possible. This then allows the service mode to work, which is vital on multi-user PCs. Other utilities tend to set up the service mode as and when it's needed, so this method simplifies matters greatly. The wizard then opens and you can choose to back

up, restore or set up disaster recovery.

NovaBACKUP can handle backups in the same 'Snapshot' way as Retrospect, taking a copy of all selected files but not marking them as backed up. It improves performance significantly – an average backup data rate of just 206MB/min is increased to 581MB/min in Snapshot mode. It's still slower than the rest though, and you can't follow a Snapshot with an incremental backup, so it's worth noting the slower speed of a regular full backup.

Although this is as much as five times slower at backing up than the fastest this month, the fact that it runs in the background means it isn't a major gripe and NovaBACKUP makes up for it in other ways. New to version 7.3 is support for open-file backup, which makes use of Microsoft's Volume Shadow Copy Service. As with Retrospect and True Image, means a scheduled backup can run without problems even if other applications are using some of the selected files for backup.

Add-ons can be purchased to cover less common file types. The scheduler worked reliably, with hourly, daily, weekly and monthly choices at set times, all running discreetly in the background. Incremental and differential backups are supported, as well as archive

verification and compression. NovaStor has included virus scanning of archives, which is an unusual but useful addition, and there are filters and pre/post-backup commands if needed too.

The Disaster Recovery option takes a normal backup but appends data to it such as the Windows folder, system state and the Program files directory, allowing you to recover your system once you've created a boot disk.

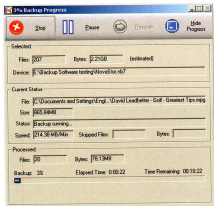
NovaStor NovaBACKUP 7.3 is comprehensive and easy to use. It has nothing to match the Startup Recovery Manager of True Image, but it does support CD and DVD burning. With the higher price though, it doesn't offer enough value to beat Acronis this month.

LABS VERDICT

Open-file support and virus scanning are among the wide range of features, but slow performance and a relatively high price limit NovaBACKUP's appeal.

Performance	★★★★★
Features & Design	★★★★★
Value	★★★★★

OVERALL ★★★★★



Roxio Backup MyPC Deluxe 6

PRICE: \$75

SUPPLIER: www.citysoftware.com.au

In terms of file and folder backup, software doesn't get much more streamlined than Roxio's Backup MyPC. It has the most simplified interface of all the utilities on test, but this doesn't mean it's the most limited in terms of features.

Virtually everything you can do with the program is accessible from the sparse main menu, with prominent options for the various wizards and more advanced choices down the left-hand side. Dive straight in with the Backup

Wizard and it's all presented in clear English rather than standard backup terminology, making each required step obvious.

You can back up files and folders, or image the entire disk. Also, you're offered the choice to back up all files or just those that are new or have changed since the last backup. If you use the advanced options, you can choose between incremental and differential backups. During the process, you can have the archive verified, compressed and scheduled with ease.

Once you've chosen your settings for the first time, you can make use of the ultimate time-saving tool: one-button backup. This presents you with a pull-down menu to choose the backup location before simply getting on with it. A few minutes later, you have a backup, which is ideal for home PCs that may be switched on and off throughout the day or remain off for days on end, playing havoc with the scheduler.

Backups aren't particularly quick, with an average data rate to our test disk of just 507MB/min. The scheduled tasks will run silently, and by entering the local account details they can continue running with no users logged on.

There are all the usual scheduling options (hourly, daily, weekly) and nifty tickboxes to specify which days you'd like to run incremental backups. The Compare Wizard verifies all the files in the archive against the original to check for changes or errors, while the Disaster Recovery Wizard prepares a boot disk (it only supports floppy disks) and backs up the necessary system files to an archive.

Although it suspiciously supports only Windows XP and 2000, Backup MyPC is a fine piece of software. It can't match True Image 9, but it's a good choice for those who want simplicity and don't require things like password protection or advanced encryption.



LABS VERDICT

It includes drive-imaging and system-recovery options but the best thing about it is simplicity.

Performance
Features & Design
Value



OVERALL



SoftLogica Backup Platinum 2

PRICE: \$91

SUPPLIER: www.backup-platinum.com

SoftLogica Backup Platinum 2 is the vanilla package this month: it offers system-recovery options or full disk imaging. But that's no reason to discount it as it offers all the basic backup features and carries them out simply and reliably.

Everything is displayed in the various divided windows of the main screen, so apart from the wizards, there's no jumping around involved. This makes the software simple to learn, although the wizards work slightly differently to the norm this month. Rather than using a wizard to carry out your backup, you merely create a backup task, then run it from the list in the main window pane.

You begin by naming your new job and choosing either backup or synchronisation. This is a roundabout way of keeping an image of your disk – with folder structure intact. It can be scheduled to run automatically like a normal backup, saving all or modified files.

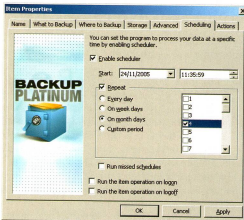
For a normal backup, you have a choice of files and folders, Outlook files and Registry keys, so with a bit of work you can build yourself an archive of most of your system if you don't mind restoring it manually. The usual backup destinations are supported with the exception of DVD-RAM discs. You can also

authenticate the source drive if it requires a password.

Where SoftLogica has excelled is in its encryption and compression options: choose to duplicate the data as is, Zip the files up (or Zip each file individually) so they can be accessed without special software, and apply 128-bit Blowfish encryption for added security. Compression level is adjusted with a slider (there are 10 positions), and the backup process thread priority can be raised or lowered, making this one of the most flexible apps of the group.

Once the wizard's complete, your saved task appears in the list in the main window to run whenever you need to. The scheduler is detailed and reliable, with checkboxes to choose repeat days and times, or you can set it to run at logon or logoff. Service mode is fully supported so your tasks will run even when logged off. And if you're working, you can ignore the pop-up windows as they close automatically after 30 seconds.

While differential backups aren't supported, incremental backups aren't offered by the wizard and there's no archive verification, SoftLogica Backup Platinum 2's real downfall



is its price. At \$91, it's one of the most expensive, and without features like recovery and imaging, it isn't great value.

LABS VERDICT

Too expensive for a relatively basic package. Backup Platinum 2 has some nice features, such as Blowfish encryption and a choice of archive types, but it isn't great value.

Performance
Features & Design
Value



OVERALL



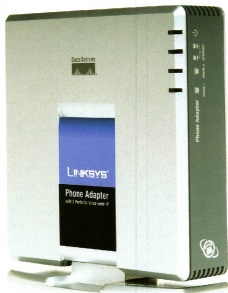
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CISCO SYSTEMS



Questions & Answers

David Moss encounters system freezes, Registry problems, and even jump-starts a PC.

FICKLE FOCUS

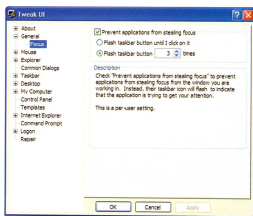
Q How do I control Windows XP and the way it brings windows to the front automatically? I often start an application and, while it opens, continue using a different program. It's annoying when Windows then decides I must want to go to the recently opened application and brings that to focus. It also does it at random times throughout usage, where it will suddenly swap the window in focus. I should be in total control of which window is in focus at all times. Is there any way to turn off Windows second-guessing what I want? **D. Watts**

A What you need is Tweak UI from the Windows XP PowerToy suite, a collection of tools Microsoft provides to "...add fun and functionality to the Windows experience". (I should point out that they're unsupported so if anything goes wrong, you're on your own, but I've been using them for years without any problems.) If you're happier delving in the Registry than using unsupported tools, there's a key called ForegroundLockTimeout that you can play with instead, located under HKEY_CURRENT_USER\Control Panel\Desktop.

I wouldn't advise that route, though, and suggest you use Tweak UI.

The PowerToys, available from www.microsoft.com/windowsxp/downloads/powertoy/xppowertoy.mspx are frequently updated and new ones appear from time to time - some of the newest are: the Colour Control Panel Applet that gives you fine control over Windows XP colour settings; SyncToy to help you copy, move and synchronise folders; a RAW Image Thumbnailer and Viewer; and a tool for tuning up ClearType on the screen. There's also a new Tweak UI for Itanium-based systems.

To sort your window-focus problem, fire up Tweak UI, expand the General tree item and click on Focus. You'll see a setting that prevents applications from stealing focus, and you can choose what happens when that setting is enabled (which it should be by default). Flash the attention-seeking application's taskbar button until you click on it, or just flash it three times. The latter is the default, and once it's flashed three times the button remains highlighted in the flash colour. It doesn't always work, and some applications seem able to steal focus regardless of this



▲ Use the Windows XP PowerToys Tweak UI to prevent applications stealing focus when they load.

setting, but this should prevent most from being a pain.

RESTORATION TRAGEDY

Q I have a question about a checkbox losing Config changes overnight.

Everyday, I have to reset my taskbar notification area to hide unused icons. I do this via Control Panel, taskbar and Start Menu Panel, and then check the box against 'Hide inactive icons'. I then hit Apply and the icons are hidden instantly, but the hourglass remains for about five seconds. I then hit OK and the hourglass takes about five seconds again to close the taskbar window, as if there's a time-out occurring. Tomorrow, I'll have to do this again, as the 'Hide inactive icons' box will be unchecked. However, if I turn off the computer during the day and then back on again, the taskbar will most likely be as I've set it earlier in the day, with the unused icons hidden.

While this is annoying, I've been living with it as it's 'too hard for the benefit' to find the cure. However, earlier in the week I set a restore point before uninstalling my old scanner software and installing that which came with the new scanner. All worked well and a restore wasn't necessary, but while looking at the Restore window I noticed that there were no other Restores available, despite the fact that I had set several restore points previously and the computer should have been creating its own regularly. Checking back at the Restore window the next day, there were no Restore points available, so

READER'S TIP 1: What a drag

Reader Mario Veraart thought my answer to Mindspit in February was incomplete (I was talking about the different ways files are copied or moved, depending on whether they were on the same drive). Here's what Mario has to say:

"If you drag a file/folder to a different drive, the default action is copy. You can see that by looking at the cursor; it contains a small <=> sign. But if you press the Shift key while dragging, you see that the plus disappears and that you now can move the file/folder. Also, if you drag-drop a file/folder on the same drive, you can get a copy by holding the Ctrl key - the <=> appears in the cursor."

Alan Salmon then wrote in to say: "Regarding the 'What a drag' question, you suggest using the RMB, but there's an easier way. Holding the Shift key while dragging and dropping in Explorer always moves, regardless of whether it's the same drive or not (it shifts the file from one place to the other). Likewise, holding Ctrl while dragging always copies, even

to same drive, even the same folder (in which case, the new file is named copy of filename.exe)."

Nick Paling had this to say: "With reference to your answer to the 'What a drag' question, I was surprised you didn't mention the Shift and Ctrl keys. These modifier keys work in so many places, doing so many different things. The explanation I give for their use is that when you want to shift/move something from one place to another, you hold down the Shift key while clicking with the left button. On the other hand, when wanting to copy, you press and hold the Ctrl key. The Shift, Ctrl and Alt keys all modify the actions of the click of a mouse button in all sorts of applications. Try left-clicking on a word in Microsoft Word with Shift, Ctrl and Alt. Resizing objects, they all do different things."

Thank you all for writing in. I still prefer my right-mouse-button method, because I'm too lazy to use both hands, but I did let this preference blind me to other solutions.

the one I'd set the day before had been cleared. So now it's clearly worth finding and fixing the problem.

A check of the Help and Support Center, Advanced Systems Information and View Error Log shows that I have an entry for most days of: 'The System Restore filter encountered the unexpected error "0xC0000010" while processing the file "45622.lrd" on the volume "A:\OSX". It has stopped monitoring the volume.'

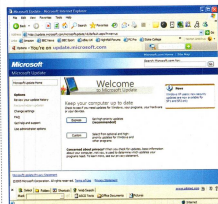
The entry in the source column is 'sr'. This entry appeared twice on the day I set a restore point. I don't know if it's a red herring. I'm running XP Professional with SP 2 and all the updates from Microsoft. I also have Norton AntiVirus 2005 and AVG Free running continuously, with weekly sweeps by Ad-Aware, Spybot, a-squared and Pest Patrol. I also have the Windows Firewall activated. Could the two disappearing config changes be linked, and how can I resolve the Restore Point issue, at least?

Greg

A I'll need to research your first problem for a later issue, but I do know what's up with System Restore — it's unable to rename a file called change.log. System Restore tracks the activities on a volume

and logs them in this file, which is created in every restore point folder. Every time you restart your system, change.log gets renamed to change.log.number, where number is the next free number up to 1000, and therein lies your problem. Once System Restore reaches 1000, it's no longer capable of renaming the log file and so simply stops logging, which is a pretty poor show.

The 'solution' is to turn off System Restore and then turn it back on again. This means you



▲ Unless there is a compelling reason not to do so, being fully patched via Microsoft Update is a recommended course of action.

will lose all your restore points and the ability to undo any changes previously made to your system.

There's a Microsoft Knowledge Base article, KB310405, that shows you how to turn System Restore on and off in Windows XP and you can find it at <http://support.microsoft.com/?scid=310405>

BIG FREEZE

Q I'm having problems with my system freezing. I run under Windows XP SP 1 and leave my system switched on most of the time. Intermittently, after the system has been unused for some time, I find that a number of things start to happen: either the Desktop icons and taskbar have disappeared, leaving just the wallpaper; I have the welcome screen, but it seems locked; or I have all the Desktop icons but any applications running refuse to respond and I can't load any other applications. In each case, the applications that were running still seem to be there (at least the data light on my broadband modem is still pinging its server) but I have to close down and restart the system as the only way to keep working.

My first thought was that I had a

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READER'S TIP 2: Word copy

In our January issue, I talked about removing the formatting from text to be pasted into a Microsoft Word document (for example, to strip the HTML code from a web page) by first pasting it into Notepad and then into

Word. Many thanks to Peter Johnson who wrote in with this tip:

'I find it easier to select the required text <Ctrl-C> and then do Edit | Paste Special | Unformatted Text.'

Using 'Add Value', add the following entries if not present:
Value Name: UseOpportunisticLocking
Opportunistic locking ON (Opera 1 OFF)
Data Type: Reg_Dword
Data: 1

Is it possible that these Registry changes (Opportunistic Locking) could have something to do with the file save problems?

R. Gordon

A I'd say that the Registry is undoubtedly the problem. Opportunistic Locking (OL) is a mechanism that lets multiple Server Message Block (SMB) clients lock files and cache the file data locally. SMB is a protocol that's heavily used by Microsoft Windows to handle server process requests from client systems, as well as enabling client systems to read from and write to files on a server. (Samba is the Unix equivalent and was developed specifically to support Microsoft's SMB.) The ability to cache data locally removes the risk of another user changing the contents of the file and also means that as the file data is now on the local system, there's a consequent decrease in network traffic and a much better response time.

Anything that improves response time is laudable, but the downside can be that when another client goes to access the same file, the server has to work out how best to break the lock, and this can result in a visible performance decrease while this process goes on. When OL is requested, the server first checks to see if any other process has the file open. If the file is free, the server grants the OL and hands the file over to the redirector. The redirector then handles all the nifty stuff like read-ahead, write-behind, lock caching and so on, and all is well at the client end.

If another process tries to access the file, however, the redirector must sort out the cached data, clear out the writes and make sure they're written and then either release the OL or open the file.

You might think at this point that OL is over, but that's actually not the case – there's another level of OL that enables multiple clients to read the same file and have all the benefits of locally cached data. As long as no client rocks the boat by trying to write to the file, this will work fine.

There are a huge number of Microsoft Knowledge Base articles on OL and I simply don't have the space to comment here on all their content. You might find the following articles helpful: 296264; 822219; 818396; 888562. You can access these articles online by visiting <http://support.microsoft.com/?scid=articlenumber>, where articlenumber is the number of the article you wish to view.

virus, but full scans with Norton Internet Security 2006 and Spy Doctor show nothing: Chkdsk did show a 'Correction Error in Index \$130 for file 25171' but appeared to fix that.

D. Rees

A It looks to me as though you have a memory problem: maybe an application leaking memory, or it could simply be that you have too many programs running and something isn't releasing memory when it's supposed to. Windows XP can also suffer from problems of this nature if you do a lot of hibernating and resuming without restarts. I don't have your system details, but based on what you've said I have a few suggestions.

The first is to upgrade to Windows XP SP 2, unless you have some very compelling reason not to do so. After doing that and resolving any firewall issues, update your video driver and make sure you're fully patched via Microsoft Update (the updated version of Windows Update), which you'll find at <http://update.microsoft.com/microsoftupdate/v6/default.aspx?ln=en-us>

If you continue to get the same problems, you'll need to do some troubleshooting on your system by observing exactly what causes the problem to appear: does it happen when no programs are running (other than the 20-odd processes that are loaded when you boot your system)?

If there are no problems, then add one program at a time and watch closely what happens. If your system is low on physical RAM, an upgrade could obviously make a big difference. I recently upgraded an old system for a friend that only had 128MB of RAM – it was running slowly and showed lots of minor ailments, including an occasional lock-up. Simply adding an extra 128MB RAM to take it to its maximum memory capacity (I said it was an old system!) has had a profoundly restorative effect.

GROSS OPPORTUNISM

Q I've set up a small network for a client running Small Business Server 2003 and four Fujitsu XP Professional clients. I've done several similar networks before and never come across this problem.

All clients are domain members, and have a shared network drive on the server. Frequently, when the client

machines have a Word/Excel file open from their shared area on the server, the document hangs when Save is pressed. The OS hangs as well. Eventually, you can <Ctrl-Alt-Del> back into Windows, and on going back to the document in question, it will have been renamed as a temporary file or a recovered file (random filename with no extension). Usually, the change to the document will have been saved, but not always. This doesn't happen all the time, just some of the time. I can't find much of a pattern.

Now the main part of the question: the client has an accountancy package that was installed on the server and clients. There were several requirements given to me by the company installing the accountancy package, network config and so on. There were also some Registry changes on the server and client machines, and I'm wondering if they're connected.

I was asked to do the following:
1. Windows 2000 Server/Server 2003 Recommended changes to the Registry Using Regedt32.exe, go to the following SubKey:

```
\Hkey\Local_Machine\System\
CurrentControlSet\Services\
LanmanServer\Parameters
```

Using 'Add Value', add the following entries if not present: Value Name: EnableOplocks Opportunistic locking ON (Opera 1: Opportunistic locking OFF)
Data Type: Reg_Dword
Data: 1

Value Name: CachedOpenLimit
Data Type: Reg_Dword
Data: 0
Value Name: autodisconnect
Data Type: Reg_Dword
Data: ffffffff
**** Reboot the server to implement the changes ****

2. Client machines, XP Professional Recommended changes to the Registry Using Regedt32.exe, go to the following SubKey:

```
\Hkey\Local_Machine\System\
CurrentControlSet\Services\
LanmanWorkstation\Parameters
```

Systems sense

Unprotected machines are easy targets for infection and identity theft. PC Authority lights the path to a secure system.

1 Build a firewall

Anti-virus and security software researchers claim that unprotected machines can be compromised and infected within 10 minutes of connecting to the Internet. The only thing that will stop Net nuisances getting to your data is a firewall. A hardware firewall, such as those built into the better broadband routers, is generally more sturdy than a software version – although it certainly doesn't hurt to have both. The Windows Firewall – brought in with XP Service Pack 2 – does a decent job, but it doesn't block outbound data like rogue diallers.

2 The name game

It's all too easy to concentrate on passwords while forgetting about usernames. Adopt a similar strategy when choosing them: don't use obvious or family names, don't use the same username for every account and service, and don't tell anyone what they are. Once revealed, that's half your login security compromised.

3 Patch! Patch! Patch!

Microsoft often (rightly) gets blamed for security holes that leave your data vulnerable to hackers and identity thieves. Yet when patches are released, vast numbers of users don't download and apply them. This leads to ancient exploits still appearing in the anti-virus global statistics in large numbers. Make sure you install Critical Updates to your OS as they become available, and don't forget to do the same for your applications as well.

4 Avoid the administrator

Unless you need access to administrative rights, don't log in to Windows using the

5 Give notebooks the finger

IBM pulled out all the stops to produce a highly secure notebook in the ThinkPad T43. You get an embedded, pre-boot emergency subsystem that can come to the rescue with one button even if the main OS has been infected or corrupted. A fingerprint scanner is located on the wrist-rest, and is so discreet you might miss it at first. It captures more data than a traditional picture window scanner because it scans more of the fingertip's surface area. As a result, it's quick and accurate: one swipe, two seconds, total security. And all this in a tin thin-and-light shell.



▲ Remember to install critical updates to your OS and applications. Patch and cover up your holes.

admin account. This increases the risk of an unauthorised user accessing vital settings when you leave your system for more than a few minutes. You could always rename the admin account to something else that only you know to make such an intrusion even harder.

6 Stop spyware

Spyware, adware, malware – whatever you call it, you don't want hidden applications running in the background. They can report your online movements, display adverts or harvest personal data. Install a spyware scanner to detect and neutralise the threat. We like the free but complex Spybot Search & Destroy

► Lock up your data, and take the key with you.

(www.safer-networking.org) and the commercial but ever so slick and powerful Spy Sweeper (www.webroot.com).



7 Encrypt files

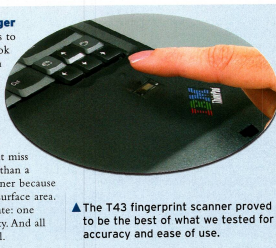
Ensure only the people you trust can view your data by encrypting files and folders using DESkey+ USB hardware security keys. Insert one into a USB port and encrypt any sensitive file or folder. Once you remove the key, nobody can access that file until the USB device is inserted again. The product is aimed at the corporate market with multiple keys allowing executives to share access to sensitive information, such as payroll data. The device includes a RISC-based 8-bit smart card microcontroller, a 16-bit crypto-processor and is loaded with its own OS. Each key has 2KB of secure memory, allowing it to hold up to 64 encryption keys as well as the associated PINs and passwords. They cost US\$175 for a pair from www.deslock.com.

8 NAT routers

When you order a broadband connection, many ISPs will supply you with an ADSL modem. However, it's often advisable to throw it away and buy a router instead. That way, instead of your IP address being exposed to everyone, the PC retains a private IP address. What the Internet sees is the router IP address, not your PC. The router translates between the two addresses using Network Address Translation (NAT).

9 Don't delete, erase

Dropping a file into the Recycle Bin doesn't actually physically delete it from your hard disk. Windows simply changes the data to flag it as deleted and allows the 'space' to be used by other applications. Use a secure erasing tool such as the free Eraser (www.heidi.ie/eraser) – which meets stringent US Department of Defence data disposal standards – to overwrite your files with pseudo-random data patterns.



▲ The T43 fingerprint scanner proved to be the best of what we tested for accuracy and ease of use.

Jargon Buster: NAS

Want storage in a box? Know the jargon before you install a network attached storage server.

NAS

Network attached storage refers to standalone data stores that can connect directly to an existing network. NAS devices have their own server software built-in, which lets you configure it your existing network, and serve files (as well as other services) to users. They are often 'headless', which means you can't access it directly via a keyboard and monitor. Instead, they are managed remotely via a web browser or other HTML interface. A good NAS server will let you manage user accounts, and offer advanced features like printer and FTP servers.

SAN

To add further confusion to the networking mix, a storage area network is distinct from a NAS device. Where NAS servers are independent, self-managed storage devices, SANs are part of an interconnected pool of 'dumb' storage devices. In a large corporate environment, for example, a SAN would contain many terabytes of data from many hard drive arrays. Accessing the storage in a SAN environment is simply a matter of pointing it to the 'pool' rather than a dedicated server containing specific hard disks. The SAN management software allows hard drives to be added to the pool (or taken away) seamlessly.

Ethernet

All home and small office NAS devices are Ethernet-based, often capping out at the 100Mb/s mark. Gigabit Ethernet is on the horizon, and while currently too expensive for home use, you can expect prices to drop this year as home networks look to upgrading from the increasingly inappropriate 100Mb/s speed limit.

Wireless

Though rare, some NAS devices are wireless-ready. These units usually support 802.11g and WEP security at a minimum. Due to the higher cost, unstable nature of wireless, and the reduced speed, wired NAS devices are the better alternative.

Server software

For NAS devices to be standalone nodes network, they need an operating system with server software. The server software lets you enter the details on your network, and allows the creation of user accounts. Common server software includes Microsoft's Windows Storage Server, and various Linux-based operating systems are also popular. Most servers also run a small web server which allows any computer on the network (provided they have the relevant user account) to configure it remotely.

Print server

Print servers let many computers access a single printer that's attached to the network. In the home or small office, this often means the printer is attached to a desktop, and anyone else on the network would need to switch on the attached desktop in order to print from it. Because the NAS device typically consumes low power and is always on, it's a perfect candidate for a print server in the home or small office. NAS devices with built-in print servers mostly access the printer via USB, but some may have a dedicated printer port.

FTP

FTP servers are specifically designed for transferring files across the network, or the Internet. Although not vital for home networks, running an FTP server can be useful for small businesses. Some NAS devices let you receive file requests via FTP, which can be configured through the server's management interface.

User account

To keep your NAS secure, most servers let you create user accounts. When someone on the network attempts to access the stored files, a login and password prompt will appear. Depending on the type of account, users can get full or read-only access to specific folders. In addition, you can often set up groups if you intend on having larger numbers of people



requesting access. Groups work by applying a set of usage restrictions to any group member, thus avoiding the need to labouriously create many individual users with identical permissions.

Backup

Backup capability is a natural complement to NAS devices. Some feature scheduled backup options to a remote location, or to an attached external USB device.



Power management

Although most NAS devices consume less power than a desktop PC, there's no point having it running at full pace when it isn't being accessed. If you're power conscious, check to see if you can put it to 'sleep' after a designated time of inactivity.

Operating system

If your network is accessed by PCs using different operating system, be sure to check whether the operating system is supported. Typically, Linux and Mac systems can access

Windows servers, but there may be proprietary login or other configuration software that can only be run from a Windows desktop.

Remote access

Remote access is a key component of NAS devices, as they don't have any direct form of input and output. Instead, you'll most likely be accessing it via a web browser, and from there you can tweak the configuration, reboot the server, change its IP address, and manage user accounts. Some devices may require proprietary login application instead of, or in conjunction with, a web browser.



THE NEW GAMING DOORWAY TO DOMINANCE

Professional gamers agree: Creative Sound Blaster X-Fi is the difference between getting fans and getting fragged.

Gaming is serious business these days. Professional gamers are raking in massive sums of money making their rounds in the competitive circuits. As the competition gets tougher, the need to carve out an edge becomes all the more pressing. The best gamers, like the undisputed king of the hill Johnathan "Fatal1ty" Wendel, are therefore turning to a thus far underutilised asset to give them the much needed edge over their opponents: audio. Little wonder, then, that they have been hailing Sound Blaster X-Fi as the new holy grail of gaming - an absolute must-have for every serious gamer.

Let's find out why.

THE NEED FOR SPEED(X-RAM).

All discerning gamers know that frame rates is one of the major factors that determines whether you end up at the top of the podium, or six feet under. Many fork out hundreds of dollars on extra RAM and a new video card just to gain a measly 3 to 5 percent improvement. Sound Blaster X-Fi is a much more cost-effective option. In our Battlefield

"X-Fi Fatal1ty FPS is an impressive piece of hardware that fulfills the key functions of a soundcard better than any other consumer product. Hardcore gamers now face the difficult choice: a new graphics card, or an X-Fi Fatal1ty FPS" - Australian PC World, NOV 2005

2 benchmarks, for example, we noted a 40% increase in frame rates as compared to motherboard audio solutions, and this with EAX 5.0 and all

Sound Blaster enhancements

turned on to boot! And on the versions of Sound Blaster X-Fi that feature 64MB X-RAM (Fatal1ty FPS and Elite Pro), there's the potential for a further performance boost!

FRAGGING WITH YOUR EARS.

Mastering the interpretation of positional audio cues is a secret that true gaming gurus use to outplay their opponents. Accurate and clear positional audio is hence of extreme importance. And it is in this department that Sound Blaster X-Fi really shines. With Creative's proprietary CMSS-3D technology, you'll be able to pinpoint

your enemies with unerring accuracy. It gets better. You'll even be able to enjoy the

benefits of positional audio on a regular pair of headphones! CMSS-3D

Headphone creates ten virtual speakers around, above and below you, providing such realistic 3D positional, elevation and proximity effects that you'll forget you are wearing headphones! Just to prove how powerful this new technology is, our tests drew disbelieving and downright awestruck looks from all our test subjects, who then proceeded to search the room for hidden speakers.

HEAR THE REAL DEAL.

Accurate audio is only useful if you can hear the whole picture. Because the older generation sound cards weren't able to process large numbers of voices, developers were forced to introduce voice culling, leading to greatly reduced realism. Imagine being unable to hear where the sniper who's taking pot-shots at you is firing from just because the sound card killed that audio track to make room for others. Say goodbye to such problems with Sound Blaster X-Fi, which handles a whopping 128 voices. Throw in X-Fi 24-bit Crystalizer - which upgrades existing audio to Xtreme Fidelity and what you'll get is your games, MP3 audio and CD audio sounding more dynamic and realistic than you could ever imagine.

"MP3 files with the X-Fi sounded distinctly clearer and sharper than the Audigy... the 24-bit Crystalizer clearly made a marked improvement when enabled... in fact, disabling it again made the music seem somewhat flat." - Atomic Maximum Power Computing, OCT 2005



Also available:

X-Fi XtremeMusic • PCI Solution For Music Lovers After An Unbeatable Music Listening Experience • 109dB SNR
X-Fi Platinum • The Perfect Solution For PC-Based Home Theater And Entertainment • I/O Drive • 109dB SNR
X-Fi Elite Pro • The Definitive Audio Creation & Home-Theater Solution • I/O Console • 116dB SNR • X-RAM



PC PowerPlay
X-Fi Elite Pro
December 2005



PC Authority
X-Fi XtremeMusic
December 2005



APC Magazine
X-Fi Elite Pro
November 2005



PC World
X-Fi Fatal1ty FPS
November 2005



Atomic MPC
X-Fi Fatal1ty FPS
November 2005



PC Games Addict
X-Fi
November 2005

Sound Blaster X-Fi Fatal1ty FPS

The Ultimate Solution For A Breathtaking Gaming Experience

- Xtreme fidelity 24-bit/192kHz, 109dB SNR
- 64MB of on-board X-RAM
- Support for EAX® ADVANCED HD™ 5.0
- X-Fi CMSS-3D for realistic surround audio even over headphones
- X-Fi 24-bit Crystalizer, 3D MIDI and more...

THE CONCLUSION?

No matter which X-Fi card you look at, it's a revolution in PC audio. All of Creative's new Sound Blaster X-Fi range include a host of features not found in any other PC audio solution such as EAX 5.0, CMSS-3D and 24-bit Crystalizer. In addition Creative has tailored each card to meet your individual needs. There's X-Fi Xtreme Music which provides a simple PCI upgrade solution for those who want to dramatically improve on their current on-board audio solution, or X-Fi Platinum for an additional drive bay. X-Fi Fatal1ty FPS also adds 64MB of X-RAM, whilst the X-Fi Elite Pro is the definitive audio creation, gaming and home-theater solution with its external I/O console, 116dB SNR and X-RAM.

COMPANION PRODUCTS.

Pair Sound Blaster X-Fi with these companion products for the best possible experience.

HEADPHONES



Creative Digital Wireless Headphones CB2530



Creative Noise Cancelling Headphones HN-700

SPEAKERS



Creative Gigawatts™ 5750



Creative I-Trigue 5600

DIGITAL AUDIO PLAYERS



Creative Zen MicroPhoto 8GB Capacity



Creative Zen Vision M 30GB Capacity

Duty of care

Jon Honeyball finds Microsoft making adjustments to its software, and all for the good of the user.

Microsoft has announced and delivered another component of OneCare, an online product designed to keep your machine in tip-top condition. Some parts will be paid for on a subscription basis, while others will continue to be free. At www.live.com I signed up for the beta of the OneCare Live program, and after a few mouse clicks I was downloading the new OneCare Live client, which runs on an XP computer.

First impressions are useful, and OneCare Live appears to be a quite comprehensive package of performance and stability tools. It takes over from the Windows Security Center application, and it's through the new OneCare shell application that you get to all its features. These are the anti-virus, firewall and automatic system updates, all bundled under the Protection Plus monicker. Then there's a Performance Plus section that allows you to run a Tune-Up, consisting of deleting unnecessary files, defragmenting the hard disk, a virus scan, a backup check and an update check from Microsoft. There's also a Backup and Restore section that runs the backup application.

application blocks both outbound and incoming traffic – a significant improvement over the inbound-only filtering of the XP SP 2 firewall.

The backup program is long overdue – I've been ranting for years about how Microsoft needs to really take the bull by the horns over the issue of backup, restore and disaster recovery. I don't think this product goes anywhere near far enough, but it's a start and might prove to be just about enough for many users.

'The backup program is long overdue. I've been ranting for years about how Microsoft needs to really take the bull by the horns over this...'

However, there isn't enough in OneCare to get the juices flowing, let alone anything that feels worth opening the wallet for. It's early days though, and maybe we'll see a lot more bundled in future versions. The AntiSpyware technology is missing from this bundle at the moment, but that could just be a matter of beta

scanning engines at the same time on the same machine. Then we'll be able to make value judgements about its efficacy and worth in a real-world environment.

What Microsoft proposes to charge for the final bundle is still completely unknown, as is the shape or form it will take. Cautious optimism is thus allowable, even if it's tainted with the unshakeable worry that we shouldn't really be in this position in 2006.

Excel Inflated

Just as this column went to press, I installed the Beta 1 release of Office 12, the forthcoming release of Office due some time late in the year.

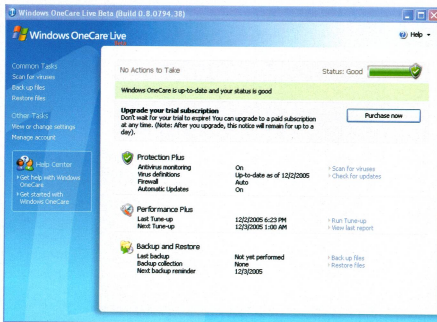
The changes in the product are huge. Everywhere you look, something has been changed for the better. This will be the biggest and most important release of Office practically since the first version over ten years ago.

I'll be sharing the more interesting little details with you over the coming months, but I'll start with a small but hugely significant change in Excel. Up until now, we've had to build our worksheets in a way that fitted within the size constraints of 256 columns (up to 1U) and 65,536 rows. Both of these limits might seem quite generous, but they're actually a serious drawback for a lot of data-oriented tasks that can be efficiently done within Excel. I routinely generate worksheets that have to span five or six sheets just because of the limitation on columns, for example. And 65K rows is nowhere enough for doing front-end analyses on large databases. So take a peek at the screenshot of Excel 12 on the next page. Yes indeed, that cell with the 'Hello' in it is cell XFD1048576, which should do quite nicely for the next few years, I hope.

Double up on ADSL

While performing some testing in my lab recently, I needed a second ADSL line to be available for some wireless ADSL routers that had appeared on the market. I ordered up another line from my provider, and a few days later had a second 1Mb-In/256Kb-Out line installed (I live quite a distance from the telephone exchange and 1Mb is all I can get on each line).

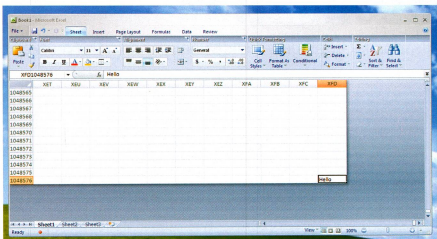
Obviously, some sort of IP trickery would be useful to make good use of both these lines once the testing was finished. It isn't hard to put a second router onto your network – just choose an appropriate TCP/IP address,



▲ Microsoft's new OneCare program does a quite comprehensive tune-up of your computer.

It would be easy to criticise this product as being a weak bundling-together of existing technologies, with a gallon or two of fresh paint daubed over the fascia. This would be a little unfair though. For example, the new firewall

updating and a muddle in the bundling. What is quite clear, however, is that Microsoft is striking hard into the core market dominated by the anti-virus companies, which have arguably had a rather cosy time of it for far too long. If OneCare forces these companies to write applications that hook into the promised new framework from Microsoft, then it will finally be possible to run multiple AV and



Microsoft's new OneCare program does a quite comprehensive tune-up of your computer.

interface). But look, you can set up multiple default gateways too, and Windows can calculate the metric for the interface, based on its speed, or you can manually specify it yourself. So in there I could enter 10.101.0.1 with a metric of 1 and 10.101.0.2 with a metric of 2. Traffic would now use the lowest number metric first, and obviously I could adjust this on-the-fly to help balance out my traffic loadings. Ideally, you'd want a box that does this for you. Such items do exist and they don't cost much. One popular example is the Cyclone device from NetEyes, which has two WAN ports and one LAN port. I'll be trying this out shortly, although it would be nicer to go to the fully balanced solution, which requires support at both ends to get the full resilience.

The point is clear though – if you're a business that relies on Internet access, then getting some sort of resilient backup for your Internet connection is a good idea (and with today's ADSL prices, it needn't cost much). Obviously, if something cuts through both your lines you still have a total failure. And a total failure at the local exchange is hard to avoid. But having dual ADSL lines would give you some protection against per-line hardware or software screw-ups, which in my experience are the most common.

making sure it isn't doing anything unhelpful like running its own DHCP server, which would clash with the existing one, and away you go. The trick is to remember that you can have multiple gateways on your network, and Windows will even quite happily let you specify more than one in its TCP/IP settings.

To put some real numbers to this, my primary ADSL line does NAT (network address translation) from one external IP address to an internal range of 10.101.x.x, and I have its default gateway set to 10.101.0.1. Then I set up the second ADSL router to do the same NAT

trick, but to appear on 10.101.0.2. Now, it would be easy to just choose some of the servers and workstations and make them use 10.101.0.1 for their default gateway, and then allocate 10.101.0.2 for the remaining boxes. That way, I'd get a crude form of load apportioning across my devices, although there'd be no attempt at dynamically levelling the loads.

However, there's a clever thing you can do in the TCP/IP networking settings in Windows. Go to the TCP/IP configuration panel and press the Advanced button (you've probably done this before to assign multiple IP addresses to one

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Virtual consolidation

Leigh Dyer shows how virtualisation technologies could change the server market.

Virtualisation is the buzzword of the moment, but Linux users have been doing it for years now, using VMware and QEMU to run Windows on a box on their desktop. Being able to run multiple operating systems on a desktop can be great for productivity, but it's in the server space that it's set to change the way we run our services.

Sysadmins have been replacing proprietary big-iron with commodity Linux systems for many years, but 64-bit computing, dual-core CPUs, and AMD's Direct Connect Architecture have boosted commodity hardware to the point where many systems are more powerful than they really need to be. Consolidating multiple virtual servers on to the one physical system makes better use of your existing resources, saving on hardware costs.

With all of your servers running virtualised, a new range of management possibilities opens up. New servers can be commissioned immediately, with no up-front hardware purchase, or at worst, just the incremental costs of adding disks or RAM to your existing server. Once your physical server is finally pushed to full utilisation, you can just commission another and shift some of the virtual systems over to it.

This reduces the cost of new servers dramatically, and you can use existing ones for all sorts of purposes that you'd never thought of before. For instance, web hosting virtual hosts that would have been placed into separate directories under a single Apache install could instead be placed into completely separate virtual systems, which can be administered and modified individually. Not only does this isolate each server from potential failures in others, but it also eliminates the possibility of clients updating their website remotely and accessing files outside their own site – perfect for sites maintained by third parties.

VIRTUALISING X86

All of this sounds great in theory, but at the end of the day, someone has to write the software to make it happen. Unfortunately, the x86 architecture that underlies the vast majority of our systems is a bit of a hack job, with legacy support for features introduced nearly 30 years ago with the original 8086. Intel and AMD have managed minor miracles to stop the architectural flaws getting in the way of performance, but those flaws do get in the way of some tasks, and virtualisation is one of them.

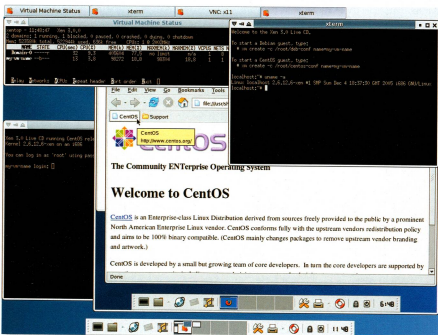
The problem lies in the several low-level instructions in the x86 instruction set that run outside the processor's ability to isolate their operation. User-space code in a modern OS runs in 32-bit protected mode, which the OS can fully control the execution of, but kernel-level code needs to use those lower-level instructions, and there's no way for software to control their

operation. VMware's innovation was to analyse code and dynamically rewrite calls to the forbidden low-level instructions, executing that code in an emulated environment in order to retain complete control of the outcome. QEMU uses a similar approach when using the KQEMU module. It's ostensibly an emulator which dynamically translates blocks of code, but if a block of code is determined to consist only of safe user-mode instructions, it's run directly on the CPU instead of being translated. Kernel-level code safely falls through to the emulator.

All of this analysing and emulation of code comes at a cost of course, and while the x86 virtualisers have done well to minimise that cost, there's only so far they can go. There's an old

paravirtualisation, and it's been greatly popularised by an open-source project called Xen. It's fast and robust, making it perfect for server consolidation. The only drawback is that it can't run unmodified operating systems, so Windows is immediately out, and even Linux systems can be tricky to install since few include Xen-compatible kernels out-of-the-box.

Intel's VT and AMD's Pacifica technologies are finally tackling the problem at the hardware level. These two similar but incompatible extensions both serve the same purpose – to allow software control of the CPU's code execution down to the very lowest levels. This not only eliminates most of the performance bottlenecks inherent to virtualisation on x86, but it also makes it easier for



▲ The live CD is an impressive demonstration of Xen's technology.

phrase about dancing bears, which Dan Rutter (one of my favourite tech writers from way back in his Amiga Review days, and now writing for PC Authority's sister mag, Atomic) likes to use that seems fitting: the wonder is not how gracefully it dances, but that it dances at all. If you've used VMware or QEMU you know they work well enough for running the odd Windows app, but for consolidating performance-critical servers, we need to get around these inherent bottlenecks.

One technique is to avoid the problematic instructions altogether. By rewriting critical parts of the OS kernel to know that it's running inside a virtual machine, and to call out to the host system when needed, there's no need for any emulation overhead. This technique is called

developers to implement, so we should hopefully see quite a bit of action in the virtualisation marketplace. In fact, the recently-released Xen 3.0 already has support for Intel's VT extension, which allows it to run unmodified operating systems, including Windows, with similar performance to its standard paravirtualisation.

THE BIG PLAYERS

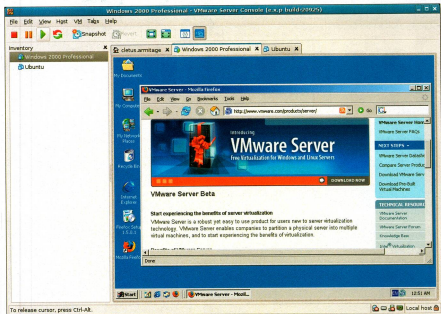
As far as I'm concerned, there are only two virtualisation products really up to the task for server consolidation work: Xen and VMware. As much as I'd love to recommend it, QEMU just isn't there yet. It's great for desktops, but it's the job for some virtual server work, but it's relatively low disk IO and network performance,

and other limitations prevent it from handling intensive server loads. I ran some benchmarks with Windows 2000 and SQL Server under QEMU, and while it worked, the performance was unimpressive.

► **The VMware Server beta is free and powerful.**

VMware's line-up on the server is divided into two streams: GSX and ESX, though in a move arguably aimed at competing with Xen, GSX has been renamed 'VMware Server' and made available free of charge. It's officially a beta test, but it's an impressive product, and for the price, it's well worth a look.

You can download it from the VMware website (www.vmware.com) after giving up your email address. The Linux version ships in both tarball and RPM formats, with some rather nice install scripts that install everything, including the VMware kernel modules, building them automatically if required. VMware Server's virtualisation is very similar to VMware Workstation. The main difference is that the virtualisation engine is split



'As far as I'm concerned, there are only two virtualisation products really up to the task for server consolidation work: Xen and VMware.'

into its own server application, with a separate client providing the GUI. It's also designed with running multiple virtual machines simultaneously in mind. The performance, much like Workstation, is good but not earth-shattering – close to native for CPU-intensive tasks, but less so for more complex loads.

VMware ESX Server is an entirely different beast, running on bare metal rather than relying on a host OS. It's an expensive beast too, but one that buys improved performance and some very impressive management features.

When using multiple physical ESX servers to run all of your virtual systems, VMware recommends using shared storage, like an Apple XServe RAID connected via Fibre Channel. With that in place, you can use their VMotion system

to dynamically move virtual machines between physical hosts without needing to shut them down. It runs unmodified guest OSs, but you need to install a number of custom drivers to get the best performance.

Xen combines aspects of both VMware products. Its core, the Xen hypervisor, runs on bare metal much like ESX Server, but it relies on a full Linux system that runs as a kind of co-host. While this system's code runs under Xen, it interacts directly with the hardware, and provides support services like storage and networking to other guest systems. It also houses the tools used to create and manage the other guests. In Xen terms, virtual systems are called domains, and the privileged co-host system is called Domain0.

While it doesn't have management tools as impressive as ESX Server's out-of-the-box, Xen does share a number of its key features, such as support for SMP hosts and guests, and transparent migration of domains on shared storage between physical servers. In fact, Xen's SMP support is arguably better than ESX's: ESX supports only 1- and 2-way guest systems, while Xen allows you to allocate up to 32 CPUs to each guest. Using Xen's command-line

management tools, you can dynamically adjust the memory and number of CPUs allocated to each virtual system.

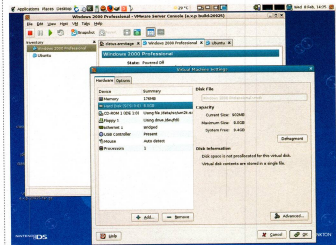
Unfortunately, because it requires a new (or at least patched) kernel, Xen isn't terribly easy to install. Using the Debian packages available from <http://packages.debianbase.de/> I was able to get the management and support tools installed in to an existing system (which would become my Domain0) easily enough, but when the provided kernel crashed my system on boot, I was forced to build my own. After a few recompiles I was on my way, but that's already beyond the means of most Linux users, or busy sysadmins with better things to do.

As with so many good Linux apps though, you can quickly test it out with a live CD available from the XenSource website (www.xensource.com), which includes CentOS 4 and Debian Sarge images that can be booted as both Domain0 and as guest domains. Bearing in mind the performance limitations of virtual disks running from a CD, Xen in action is an impressive sight to behold – virtual machines launch smoothly and are quick and responsive. Xen guest domains don't usually have a GUI, but the images on the CD feature a VNC X server, with a VNC client in Domain0 to connect to them with.

Thankfully, distributions are starting to support Xen, with Fedora Core 5 set to ship with options to select a Xen kernel as part of the installer. Novell and Red Hat, among others, plan to add similar features to their enterprise products. There's even a push to include Xen as an option in the official Linux kernel tree.

I think we'll see big things from Xen in the next year. With distributions embracing it and new CPU features allowing it to run unmodified guests, Xen looks set to become an integral part of the Linux server environment. Personally, I'll be installing it on every new Linux server I commission. I may not need it today, but in the future, the flexibility it brings may prove very handy indeed.

▼ VMware machines have a lot of flexibility.



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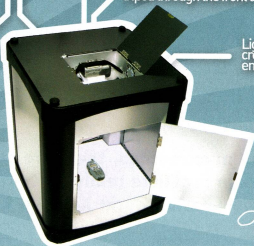
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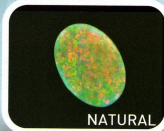
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GAMELABS

Ben Mansill is V8 thunderstruck but equipped with an army of war games to blast it all away.

BYTES

SHOOT FOR THE STARS

Activision deserves an award for its clever promotion for its god game 'The Movies'. Gamers can upload the short films they make using the game software and enter a competition, the winner scoring a trip to Hollywood.



It's taken off bigtime and many of the flicks are of astounding quality, considering the relatively simple tools used to make them. See the entries here (they load within your browser, very tidy indeed): <http://www.gamearena.com.au/competitions/themovies/nowshowing.php>.

SWARM! SWARM! SWARM!

Our only criticism of the clever tactical shooter SWAT 4 (June 2005, page 149) was its lack of a coherent storyline. We've now been silenced with the new expansion pack 'The Stetchkov Syndicate' adding seven themed missions, seven new tools and weapons. We enjoyed playing the game's unconventional game style again, and the plot gives all the door breaching a fun new purpose. Available at RRP \$49.95, rated MA15+.

<http://www.gamearena.com.au/competitions/themovies/nowshowing.php>.

THE JUMPING GAME

Deep in the annals of gaming history there is a terrible skydiving game we will never speak of. Soon, there will be a (most likely) wonderful skydiving game. With guns. Medal of Honor Airborne enlists you in the 82nd Airborne Division during WWII. The tricky bit is that after bailing out, you can steer your 'chute and where you land affects how the mission pans out. Due in Summer.



EA IN CRYISIS

Crytek's sci-fi follow up to Far Cry finds a home.

A hot new game from Crytek, the developers of the much loved Far Cry, is under development. 'Crysis' will be a PC-only shooter, following last year's Far Cry Instincts for Xbox. The new game will have no connection with the storyline or universe created in Far Cry, although it will be set at least in part on a lush tropical island.

Where Far Cry pitted you against a mad scientist and his crazed creations, Crysis tackles another cliché: invading aliens. Unlike regular-guy Jack Carver in Far Cry, the new hero you'll play will use adaptive armor and weapons to tackle the bad guys. Crysis will use an advanced evolution of the original Far Cry engine. 'CryENGINE 2' looks to be one of the most sophisticated 3D engines, designed specifically for

densely detailed, very large outdoor areas. This builds on Far Cry's unique setting, which had players shooting away on an island paradise – as far from the murky, hellish corridors of Doom and Unreal than you can get.

While the original Far Cry and last year's Xbox-only Far Cry Instincts were published by French house Ubisoft, Crysis has been swallowed up by games giant Electronic Arts. Cevat Yerli, CEO and president of Crytek commented 'Our focus has always been on innovating gameplay and technology, and bringing new experiences to gamers through our original intellectual properties. Crysis will be a showcase for that commitment and will offer gamers from all over the world the next step in FPS gaming.' We can't wait.



V8 Supercars 3

SUPPLIER Atari PRICE \$89.95

WEB <http://au.codemasters.com/tocaracedriver3>

Compromise' dictates an awful lot in this world. In the case of this game, it's a balance between quality and quantity, with quantity being the big winner.

We counted 74 different types of cars and at least 50 tracks – double that figure to include track variations. There are 120 officially licensed championship series to race in, including both the Shell and HPD Aussie V8s. There are 35 different types of motorsport, including Monster Truck racing, karting and Formula 1. No other racing game comes close to shoveling in such a generous helping of motorsport.

The V8s are but a small part of the overall package in terms of cars, but we have scored nicely with our excellent local tracks. All are in the game except Melbourne, as the rights are held by the F1 racing body (Bernie) and they won't share. The Australian series (including NZ's Pukekohe) has been updated to include tracks absent from V8 Supercars 2, being: Queensland Raceway, Symmons Plains and the incredible Shanghai circuit. Bathurst, owners of the last game will be thrilled to know, has been completely remodelled and is vastly improved with none of the 'bugs' of the previous version that made a flying lap literally just that. Aussie drivers can choose the Falcon BA or AU, or Commodore VY, VZ or VX series.



All the real driver names and car liveries are included, which is consistent throughout the game. Hats off to Codemasters, hauling in so many big names can't have been cheap or easy. Lapping Glenn Seaton should be a right not a privilege for every Aussie.

Handling is much improved over the last game, but it's still an arcade racer that pales beside proper racing sims like GT Legends, rFactor or GTR. Driving isn't intuitive and feels weirdly unnatural, but it will let you throw the cars around with tail-happy abandon.

Out of the box, the V8s come ready to race, but almost every other car needs to be 'unlocked'. You can do this via either the Pro Career, which moves through the available championships, with a brief warmup and qualifying before a short race, or World Tour, which throws you straight onto the starting grid in an unfamiliar car on a usually unfamiliar track for a mad sprint race of as little as two laps.

Either format lets you move relatively quickly through the game, having a brief taste of each car before moving on.

FUN FACTOR

Unfortunately, very little of the experience is any kind of fun. The short races mean you must abandon any notion of racing like a proper racing gentleman and instead biff and bash your way to the front in order to place high enough to progress to the next round. There is no other way. In most races you'll need to make





up a dozen places on the first crazy corner, or hit the restart button and try again. Not fun. As you progress through the series, the difficulty increases and it just gets worse. If you're in a tangle-prone open wheeler, the likelihood of being able to successfully finish a race first time is in the order of 1 in 1000.

This almost critical flaw is magnified to hair-tearing proportions by the game's AI, which is absolutely the worst in a racing game since Namco's 1982 Pole Position.

Codemasters boasts that the game can handle 21 opponent cars on-track. What that actually means is that every race has 21 reasons why you'll want to put your fist through your monitor. Opponents are utterly oblivious to your presence on the road. They will drift from side to side on straights, turn in front of you in corners, bang you from behind *anytime at all*, and tap your



rear three quarter as you take a perfect racing line through a corner at speed and send you spinning off. It's unbearably horrid and takes all the fun out of racing. It forces you to adapt your driving style to stay as far away from other cars as possible. Any half decent racing game of the last 20 years has AI that lets you mingle in packs and race like a proper racer, making the legend pass you bought the game for. Why V8 Supercars 3 is so bad in this respect is a mystery, particularly as its predecessor didn't have this problem at all.

That leaves multiplayer as the only way to play. Luckily for Codemasters, it's been handled well. The netcode is vastly improved from the last buggy game, we had no trouble with lag or warping during testing, and collision detection was noticeably superior to V8 Supercars 2.

Best of all are the racing rules. Now, fools that try and cut corners or drive dangerously slow will be black flagged. Hooray for that.

This game is a heck of a mixed bag. Great for multiplayer, or if there's a racing formula out there that's never before simulated, and you just *must* check it out. For straight up single player gaming though, what's the point of a racing game if racing's impossible?

Ben Mansill

REQUIREMENTS

P4 3GHz or Athlon 2.4GHz; DirectX9c graphics; decent steering wheel for PC version.

FOR

74 cars, including exotics previously unseen in a game; decent online play.

AGAINST

Soul-crushingly bad AI that defeats the purpose of the game itself.

OVERALL



CONQUER THE WORLD!

Empire Earth 2 packs up for grabs

Vivendi is offering six readers the chance to win a copy of Empire Earth 2 and the new expansion pack, The Art of Supremacy, for a total prize value of \$140. As a special treat, first prize also wins a copy of the World at War DVD boxset, worth \$249.95.

To claim your place among the world's greatest military minds, just head online to answer the multiple choice question below. For more information about Empire Earth 2: The Art of Supremacy, check out the review in this section, or head straight to www.empireearth2.com.

Which of the following is the correct group of new countries to be added in EE2: The Art of Supremacy?

- A) Cuba, Iraq, Bolivia
- B) Australia, New Zealand, Germany
- C) France, Russia, Africa

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Empire Earth 2: The Art of War

SUPPLIER Vivendi Universal Games **PRICE** \$49.95

WEB www.empireearth2.com

RTS gaming is no longer one C&C clone vs another. The genre is splintering and the diversity is able to feed many varied tastes. The Empire Earth series had muddled beginnings (we were lukewarm in our June 2005 review), but with a patch and now this expansion, the series has evolved to become the hardcore strategist's RTS. The latest iteration, Empire Earth 2: The Art of War, is as deep and complex as they come and is the mature gamer's choice. To be different and sophisticated,

the game doesn't lose itself in crazy design tangents, it is simply a pure old school RTS, just layered thick with almost unnecessary detail.

Research and upgrade options are excessive. Unit controls and waypointing will let your army do precisely what you want instead of blundering around bumping into trees, and you can create War Plans with intricate maneuvers. It's grown-up RTS gaming and surprisingly easy to get into.

The Art of War adds the French and Russian civilisations (can anyone guess as to why they weren't originally included in this American game?) and a few new single player historical campaigns. For quick satisfaction, we enjoyed the campaign missions. Being



thrown right into it with bases built and an army awaiting orders is nicely at odds with the way this game is usually meant to be played, which is slowly over a long time in single player mode, much like Civilization. Or if online, at least a couple of hours for a game.

We're glad this series is kicking in with quality expansions. It's RTS gaming evolved with care and balance.

Ben Mansill

REQUIREMENTS

2GHz CPU; 64MB graphics; 256MB RAM.

FOR

An RTS that won't make you feel like a kid putting blocks in holes.

AGAINST

Occasionally dopey AI and dull graphics.

OVERALL

★★★★☆

Star Wars Empire at War

SUPPLIER Electronic Arts **PRICE** \$89.95

WEB www.eaplay.com/australia/

RTS is getting tired and repetitive, and Star Wars games have been famous for almost always being bad. So it is with pleasing surprise to discover that Star Wars Empire at War is so wonderfully good. The developer Petroglyph is staffed by mostly ex-Westwood people, the C&C people and the Dune 2 people. That explains that, then.

Empire takes a fresh new approach to how RTS games are played. Instead of a sequence of land-based missions, your side (Rebels or Empire) duking it out on a galactic scale, you're calling the strategy by commanding space and land forces, deploying them across the galaxy as you see fit. Taking certain planets gives access to special units or economic advantages.

The main screen shows all stars in the empire. Dispatch some ships to a weakly defended system and a few more to a more stoutly defended planet. Combat in space is 2D RTS set against a starfield, while on the planet's surface there's no base building per se, though there are existing buildings

that produce research or weapons, and can be upgraded. Your resource is power which comes from capturing and holding generators on the planet. Reinforcement landing points and fixed defenses are other key spots to be taken and held for victory. It makes for an often thrilling ebb and flow battle as these points on the map are fought over.

This is an exceptionally well designed and extremely enjoyable game. It feels Star Warsy and is a gold class RTS to boot.

Ben Mansill



REQUIREMENTS

1GHz CPU; 256MB RAM; DirectX 9.0c.

FOR

Revolutionary new RTS elements that are all clever and fun; true 'strategy' gaming.

AGAINST

It's very Star Warsy, which some may feel repelled by.

OVERALL

★★★★★



On the CDs

Your guide to this month's cover discs

REGISTRY MECHANIC 4.0

With Registry Mechanic you can safely clean, repair and optimise the Windows registry with a few simple mouse clicks! Problems with the Windows registry are a common cause of Windows crashes, slow performance and error messages. By using a registry cleaner regularly and fixing registry errors your system should not only be more stable but it will also help improve your system performance.

Get your free registration code by going to <http://www.pctools.com/registry-mechanic/tree/promo/PCA0306>. Once installed, open Registry Mechanic and click on Register Free. Enter your license code and click Register. Your code is valid for 12 months.

UPGRADE OFFER

Get 20% off other software from PC Tools. Visit <http://www.pctools.com/registry-mechanic/tree/promo/PCA0306> and click on any one of the special offer buttons to receive a 20 percent discount.



O&O DEFRAG 4 PROFESSIONAL EDITION

There are many reasons why PCs seem to slow down over time, but file fragmentation bears more responsibility than most. As files grow, they will inevitably become spread around your hard drive, some clusters over here, some over there, increasing the time it takes to reload the file later. We've got the ideal utility for keeping your hard drive running at peak performance - O&O Defrag Professional. Register at <http://www.oo-software.com/en/special/defrag4>.

UPGRADE OFFER

Upgrade to O&O Defrag 8.0

The latest version of Defrag adds all kinds of useful new features, like improved Windows Integration (defrag your drives directly from Explorer), Screen Saver Mode (defrag only when the screen saver is activated), and special support for notebooks (avoiding draining the battery by defragging only when it's plugged into the mains). Find out more at <http://www.oo-software.com/en/special/defrag4>.



DISC INDEX

DISC 1

Full versions

Mail Manager 2.1
O&O Defrag 4 Professional Edition
Registry Mechanic 4.0
ShopFactory 5 Light
Translation Light
TurboDemo Album 1.9

Freeware

AI RobotForm 6.6.3
Aurionix FileUsage 1.1.0
CallingID Toolbar 1.2.0.21
ColorPic 4
ePicture LE 1.6.1
Cropper 1.7
DeskTask 1.0 RC2
DupKiller 0.6.2 beta
Easy2Sync for Outlook 1.10
EtherSnoop 1.11
Fireline 1.1.0
Font PDF Reader 1.3 Build 1231
FTP Wanderer 2.8
Icons from File 3.3
ISO Recorder 2 RC1
NetPing 2.2
Netscape Browser 8.1
Quotes 2006
Rainlendar 0.22
RK Launcher 0.4
SimpleOCR 3
Steganos LockNote
Virtual Drive Creator 2.13
Visualizer Photo Resize (Free) 4.0

Internet

AOL Instant Messenger 5.1
Crazy Browser 2.01
CWShredder 2.19
FileZilla 2.2.18
Google Toolbar 3.0.128.1
LeechGet 2005 Version 1.5
Mozilla Firefox 1.5
Mozilla Thunderbird 1.0.7
MSN Messenger 7.0 (98/ME)
MSN Messenger 7.5 (XP)
Portable Firefox 1.5
Remote Administrator
ServerQuery
SpamBayes 1.0.4
Trillian Basic 3.1
ZoneAlarm

Patches

Ad-aware reference file
ATI Catalyst 5.9 driver suite (98/ME)
ATI Catalyst 6.1 Control Center Package (XP)
AVG Free Edition Updates
DirectX 9.0c
Norton AntiVirus definitions update
NVIDIA Forceware drivers B1.98 (2000/XP)
NVIDIA Forceware drivers B1.98 (95/98/ME)
Spybot Search & Destroy Update
VIA HyperionPro drivers

DISC 2

Games

The Movies

Windows

Ad-aware SE Personal 1.06
Adobe Reader 7.0.5
AVG 1.1371 Free Edition
EditPad Pro 5.4.5
ExplorerXP 1.07
Google Desktop Search Version 2
NOD32 Antivirus System 2 (9x)
NOD32 Antivirus System 2 (XP x64)
NOD32 Antivirus System 2 (XP)
Spybot Search & Destroy 1.4
True Launch Bar 3.2
Tweak UI
WinRAR 3.51
WinZip 10.0

DISC PROBLEMS

To replace damaged or faulty CDs, please send the defective discs to: PC AUTHORITY CD REPLACEMENTS
Reply Paid 2275 Sydney NSW 2001

Make sure to include your name and postal address on the back of the package so that we know where to send the replacements.

For all other CD related issues email cd@pcauthority.com.au. As the delivery platform only, iPAAC Authority (iPAAC) and Haymarket Media cannot and will not provide support for any of the software or data contained on these discs. Although all discs are virus scanned, Haymarket Media cannot accept any responsibility for any loss, damage or corruption to your data or computer system that may occur while using the discs, the programs or the data on them. There are no explicit or implied warranties for any of the software products on the discs. Use of these discs is strictly at your own risk.

MAIL MANAGER 2.1

Mail Manager 2.1 works directly with your mail server to discover any waiting email messages, but only downloads the headers. This means any spam can be detected and deleted at maximum speed, with minimum effort, and without your regular email client ever knowing anything about it. Register at <http://www.bluesquad.co.uk/vnu/malmanager/register>.

UPGRADE OFFER

Upgrade to Mail Manager 2.3
New features such as address book import for Outlook 2000 or later, SSL connection support, mail log export to Excel, HTML, XML or ASCII format. Visit <http://www.bluesquad.co.uk/vnu/malmanager/offer>, enter BSQ-MAIL as the promotional code, and you'll receive a 25% discount.

SHOPFACTORY 5 LIGHT

Creating your first e-store doesn't require any knowledge of databases, HTML, or scripting of any kind with ShopFactory 5. Just work your way through the wizards, typing in company details, text descriptions and adding the occasional graphic. Register at www.makemeashop.com/covermounts/vnu.

UPGRADE OFFER

Upgrade to ShopFactory 6
The latest ShopFactory comes in four different varieties ranging from the simple eTrader pPlus to the powerful ShopFactory International. This removes any limitations on products or page numbers, and improves your site style with support for Flash graphics and a new Theme designer. Place your order at <http://www.makemeashop.com/magupgrades>.



TRANSLATION LIGHT

Translation installs an Outlook add-in that automatically handles the translation process. Just set your required language for a given contact and send your message. Translation processes the message and sends the translated version to the recipient. This version will work as the Pro edition for the initial 60 days, translating up to 15 emails every 30 days. Maximum email size is 250 words. To register, follow the instructions during installation, use the activation code PCW60 and register using your default email address in Outlook.

UPGRADE OFFER

Upgrade to Translation Pro
Pro removes restrictions on words per email, emails per month, and lets you translate up to 500,000 words per year. Find out more at the Translation site <http://www.translation.com>.



THE MOVIES

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BlackBerry
Add-On **\$15** per month
per mailbox

Setup **\$0**

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- We manage hardware and backups to protect your critical information
- 24x7 telephone support

*Mobile access via GPRS enabled devices such as BlackBerry, SmartPhone or PDA. Device and GPRS plan costs are not included in this product. Additional charges apply if using a BlackBerry device.

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BUYER'S GUIDE

Your one-stop tech shop

The A-List ★★★★★

THE BEST OF THE BEST
IN 45 CATEGORIES.

We created a brand new category this month – the mid-range notebook. Our existing notebook categories didn't really give us a chance to highlight systems that crammed in mid-high end components, and kept the price down. You'll also note that the iPod has been knocked off its perch. The Vision:M is the new MP3 king.

The A-List



HOW IT WORKS:
All A-Listed products are listed with the cheapest price and cheapest supplier.

Reviews Roundup

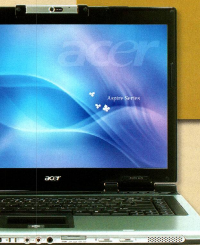
THE LATEST REVIEWS,
RANKED, AND RATED.

It's hard to believe, but TI Computers now has three PCs in our top 10. It's hard enough for a single PC maker to get in there, but three? There must be something special going on there – and there is. To compete in the PC space, you need to be smart. You need to bundle in features with the user in mind and wrap it up in a nice price. That's the winning formula.

Reviews Roundup



HOW IT WORKS:
Prices listed in our Reviews Roundup show the price at the time of review.



Products that come on top of our intensive Labs group tests.

A great product that excels in one, or many, areas.



The A-LIST

★★★★★ Only the absolute best of the best make it to PC Authority's A-List.

VALUE PC

PCMarket SDS-G2 AMD Athlon64 GDCS UPDATED



PRICE: \$1499
DELIVERY: \$44 to \$99
SUPPLIER: PC Market 02 9898 3055
INTERNET: www.pcmarket.com.au
ISSUE: January 2006, page 42
VERDICT: If your budget is tight but you want a good all round system, then PC Market delivers. It sports a decent 17in LCD, good keyboard, mouse and speakers.

SPECIFICATIONS: 1.8GHz Athlon 64 3200+; 1GB PC3200 RAM; 160GB hard disk; Dual Layer DVD-RAM writer; GeForce overlocked 6600GT graphics; 17in CMV LCD; Ozaki 2.1 speakers; Windows XP Home; 1yr RTB warranty.

HIGH-END PC

Scorptec Stinger



PRICE: \$3850
DELIVERY: \$25 to \$85
SUPPLIER: Scorpion Technology Computers 1300 726 770
INTERNET: www.scorptec.com.au
ISSUE: December 2005, page 48
COMMENTS: A great package that offers excellent peripherals including a great 19in LCD. It's powerful and practically silent too. But pay \$150 more for the 3yrs on-site warranty.

SPECIFICATIONS: 2.2GHz Athlon 64 X2 4400+; 1GB PC3200 RAM; 500GB hard disk; Dual layer DVD-RAM writer; Dual layer DVD-writer; GeForce 7800GTX graphics; 19in Samsung LCD; Logitech 5.1 speakers. Windows XP Pro; 1yr RTB.



'A very powerful system with little in the way of weak points.'

MID-RANGE PC

TI AMD Power 3000



PRICE: \$3025
DELIVERY: From \$25 to \$48
SUPPLIER: TI 02 9437 5437
INTERNET: www.ticomputers.com.au
ISSUE: March 2006, page 83
COMMENTS: There are no weak points with Trinity International's TI AMD Power 3000. 7800 GT graphics handles gaming, while a dual-core CPU, twin 250GB hard disks and 19in LCD round things off very nicely indeed.
SPECIFICATIONS: 2.2GHz AMD Athlon X2 4200+; 1GB PC3200 RAM; 500GB hard disk; dual-layer DVD-RAM writer; DVD-ROM; GeForce 7800 GT graphics; 19in BenQ LCD; Windows XP Home; 2yrs RTB warranty.

MEDIA CENTER PC

Enspire AVR-200



PRICE: \$1699
DELIVERY: \$15 to \$30
SUPPLIER: Enspire Digital 1300 880 070
INTERNET: www.enspiredigital.com.au
ISSUE: January 2006, page 43
COMMENTS: Coming in at over \$1000 less than the competition, this is whisper quiet, looks fantastic and is only 108mm high. Throw in two digital HD tuners and it's a bargain.

SPECIFICATIONS: 1.8GHz Athlon 64 3000+; 512MB PC3200 RAM; 200GB hard disk; Dual-Layer DVD writer; 2 HD/TV digital tuners; 802.11a/b/g WLAN; MCE remote; Windows XP Media Center Edition; 1yr on-site warranty.

BUSINESS PC

Dell Optiplex GX620 USFF



PRICE: \$1439
DELIVERY: Free
SUPPLIER: Dell 1800 812 393
INTERNET: www.dell.com.au
ISSUE: October 2005, page 57
COMMENTS: This incredibly compact PC can even bolt to the back of a LCD (the one pictured isn't included in the price), yet still includes a powerful 3GHz Pentium 4 processor.

SPECIFICATIONS: 3GHz Pentium 4 531; 512MB PC4300 RAM; Intel 945G Express chipset; 80GB HDD; combo CD-RW/DVD-ROM; Gigabit Ethernet; 7 x USB 2; DVI-I with VGA; Windows XP Pro; 3yr on-site; 89 x 266 x 264mm (WDH).

ULTRAPORTABLE NOTEBOOK**Dell Latitude D410****PRICE:** \$3326**DELIVERY:** Free**SUPPLIER:** Dell 1800 812 393**INTERNET:** www.dell.com.au**ISSUE:** November 2005, page 44

COMMENTS: At 1.95kg, the D410 is very portable and will last too. With a 2GHz Pentium M processor it also packs a powerful punch when used as a main system.

SPECIFICATIONS: 2GHz Pentium M 760; 1GB RAM; 60GB HDD; 8X DVD writer; Intel GMA900 graphics; 12.1in 1024 x 768 LCD; Bluetooth; 802.11a/b/g WLAN; Media Slice; Windows XP Pro; 3yrs on-site warranty; 195kg.

BUSINESS NOTEBOOK**Dell Latitude D610****PRICE:** \$2713**DELIVERY:** Free**SUPPLIER:** Dell 1800 812 393**INTERNET:** www.dell.com.au**ISSUE:** September 2005, page 38

COMMENTS: With updated Centrino inside, the Latitude D610 is a forward-looking business notebook. Highly configurable, and perfect for business.

SPECIFICATIONS: 2GHz Intel Pentium M 755; 512MB PC4300 DDR2 RAM; 80GB HDD; combo DVD/CD-RW; Intel GMA900 graphics; 14.1-inch 1400 x 1050 LCD; 802.11b/g WLAN; Windows XP Pro; 3yr on-site NBD warranty; 2.5kg.

DESKTOP REPLACEMENT**Acer Aspire 9504WSMI****PRICE:** \$3249**DELIVERY:** Free**SUPPLIER:** www.digitalcityonline.com.au**INTERNET:** www.acer.com.au**ISSUE:** March 2006, page 56

COMMENTS: A solidly built laptop with plenty of entertainment features - including an integrated digital TV tuner - and a bright clear 17in widescreen display. Contact navid@digitalcityonline.com.au.

SPECIFICATIONS: 2GHz Pentium M 760; 1GB PC4300 RAM; 100GB HDD; Dual layer DVD Writer; Mobility Radeon X700 graphics; 17in 1440 x 900 LCD; Bluetooth; 802.11b/g WLAN; Windows XP Home; 1yr C&R warranty.

VALUE NOTEBOOK**Compag Presario V2340AP****PRICE:** \$1099**DELIVERY:** \$20**SUPPLIER:** www.pc.net.au**INTERNET:** www.hp.com.au**ISSUE:** January 2006, page 38

COMMENTS: It might not offer power for hardcore encoding or gaming, but this bargain of a notebook is well built, light at just 2.38KG and offers two hours battery life.

SPECIFICATIONS: 1.4GHz Celeron M 360; 256MB PC2700 RAM; 40GB HDD; Combo drive; Intel 915GM; 14in 1280 x 768 LCD; 10/100 Ethernet; 802.11b/g WLAN; 3 x USB 2; D-Sub; XP Home; 1yr RTB warranty; 230 x 335 x 39mm (WDH).

MID-RANGE NOTEBOOK**Acer Aspire 5672WLMi NEW****PRICE:** \$2549**DELIVERY:** \$15**SUPPLIER:** www.pc.net.au**INTERNET:** www.acer.com.au**ISSUE:** April 2006, page 68

COMMENTS: Only 3D performance is lacking in this feature-packed Centrino Duo notebook. The ergonomics are great, it's solidly built and it looks good too.

SPECIFICATIONS: 1.67GHz Intel Pentium M T1300; 1GB PC4300 DDR2 RAM; 100GB HDD; dual-layer DVD-writer; ATI Mobility X1400 graphics; 15.4-inch 1280 x 800 LCD; 802.11a/b/g WLAN; Bluetooth 2; Windows XP Home; 1yr RTB warranty; 3kg.

COMPACT DIGITAL CAMERA**Canon Digital IXUS 55****PRICE:** \$485**DELIVERY:** \$12**SUPPLIER:** www.computeralliance.com.au**INTERNET:** www.canon.com.au**ISSUE:** December 2005, page 64

COMMENTS: This sports a quality 3x optical zoom and a 5MP CCD. Plus, it has a desirable chassis that slips easily into a pocket, and incredibly quick operation.

SPECIFICATIONS: SMP: 2592 x 1944 resolution; 3x optical zoom; 2-inch LCD; 1/1500 to 15 secs shutter; 50-400 ISO; +/-2EV; 640 x 480 movies; SD slot (65MB supplied); Li-ion battery; 84 x 22 x 56mm (WDH); 160g.

20+ INCH LCD**Philips 200W6****PRICE:** \$889**DELIVERY:** Free**SUPPLIER:** www.digitalcityonline.com.au**INTERNET:** www.philips.com.au**ISSUE:** January 2006, page 75

COMMENTS: The price of 20-in LCDs is plummeting and this one is a decent performer too. Add to the mix a widescreen format with a 1680 x 1050 resolution and the 200W6 becomes incredibly desirable. No more 1280 x 1024 LCD limitations! Contact navid@digitalcityonline.com.au.

SPECIFICATIONS: 20.1in LCD; 16ms response time; 300cd/m2 brightness; 600:1 contrast ratio; native resolution 1680 x 1050; D-Sub and DVI-D inputs; TCO 03; 478 x 235 x 429mm (WDH); 7.8kg.



'A great combination of quality and low price.'

HIGH-END DIGITAL CAMERA**Canon EOS 350D****PRICE:** \$1295**DELIVERY:** Free**SUPPLIER:** www.digitalcityonline.com.au**INTERNET:** www.canon.com.au**ISSUE:** June 2005, page 70

COMMENTS: With the same stunning image quality as the 300D, but this time with a slightly higher resolution, faster operation and even more compact body, this is the number one choice for semi-pros. Contact navid@digitalcityonline.com.au.

SPECIFICATIONS: BNP CMOS, 3456 x 2304; 18-55mm Canon EF-S lens; 1/8000 LCD; 1/4000 to 30 secs shutter; 100-1600 ISO; +/-2EV; CF & CF-II CARDS; Lithium-ion battery; 127 x 64 x 95mm (WDH); 540g.

The A-LIST

HDV CAMERA

Sony HDR-HC1



PRICE: \$2479
DELIVERY: Free
SUPPLIER: www.digitalcityonline.com.au
INTERNET: www.sony.com.au
ISSUE: November 2005, page 50
COMMENTS: Sony breaks new ground, introducing high-definition. With awesome quality, you'll never be able to go back to standard PAL resolutions again. Contact navid@digitalcityonline.com.au.

SPECIFICATIONS: 1080/50i HDV (1440 x 1080 at 16:9); DV recording; 2.97-MP CMOS; 10X optical; electronic image stabiliser; 2.7-inch LCD; 71 x 188 x 94mm (WDH); 680g.

VALUE PDA

palmOne Tungsten E2



PRICE: \$309
DELIVERY: \$15
SUPPLIER: www.pc.net.au
INTERNET: www.palm.com/au
ISSUE: September 2005, page 46
COMMENTS: This is the ideal partner for your Bluetooth mobile. And with good battery life, a great screen and compact dimensions, it's also a fine PDA.

SPECIFICATIONS: 200MHz Intel CPU; 32MB flash; 320 x 320 LCD; SD/MMC/SDIO; Bluetooth; IR; USB; Palm Desktop; Documents To Go T; Palm OS 5.4; 78x15x14mm (WDH); 133G Li-ion battery; 84 x 22 x 55mm (WDH); 160g.

'An obvious choice for PDA buyers on a budget.'

PORTABLE PROJECTOR

Dell 3400MP



PRICE: \$2698
DELIVERY: Free
SUPPLIER: Dell 1800 812 393
INTERNET: www.dell.com.au
ISSUE: November 2005, page 53
COMMENTS: Top of the crop, thanks to a low asking price and equally low running costs; a weight of just 1.1kg, complete with petite dimensions; and solid all-round image quality.

SPECIFICATIONS: DLP; 1024 x 768 resolution; 1500 ANSI; 15-10M throw distance; 12x optical; 2000:1 contrast; MI-DA interface; 2yr warranty; 204 x 154 x 74mm (WDH); 1.1kg; Running costs: 10c per hour.

17-INCH LCD

ViewSonic VP730b



PRICE: \$440
DELIVERY: \$20
SUPPLIER: www.implex.com.au
INTERNET: www.viewsonic.com.au
ISSUE: January 2006, page 43
COMMENTS: The VP730b's stand is one of the best we've seen, flexing generously in every direction. Performance is good with movies, games and applications. It all comes at a negligible premium too.

SPECIFICATIONS: 17-in; 8ms response time; 300cd/m2 brightness; 500:1 contrast ratio; native resolution 1280 x 1024; DVD-D; 2 x D-Sub inputs; TCO '99. Dimensions 372 x 279 x 477mm (WDH); 5.7KG.

19-INCH LCD

ViewSonic VX924



PRICE: \$569
DELIVERY: \$15
SUPPLIER: www.pc.net.au
INTERNET: www.viewsonic.com.au
ISSUE: September 2005, page 64
COMMENTS: Its 4ms response time may grab headlines, but the high-quality panel shows detail and clarity. It's certainly worth the extra money and a 17in TFT.

SPECIFICATIONS: 4ms; 270cd/m2 brightness; 550:1 contrast ratio; 1280 x 1024 native resolution; D-Sub and DVI-D; TCO '99; 431 x 201 x 472mm (WDH); 6.7kg.

MOBILE COMMUNICATIONS

HP iPAQ hw6515 Mobile Messenger



PRICE: \$704
DELIVERY: \$15
SUPPLIER: www.pc.net.au
INTERNET: www.hp.com.au
ISSUE: November 2005, page 49
COMMENTS: This GPS-equipped BlackBerry killer also sports a 1.3-megapixel camera and quad-band phone.

SPECIFICATIONS: 312MHz Intel CPU; 64MB RAM; 64MB ROM; 320 x 320 LCD; SD & Mini SD slot; 1.3-MP camera; IR; Bluetooth; GSM/GPRS/EDGE quad-band; GPS; Pocket PC 2003 SE; 71 x 21 x 118mm (WDH); 165g.

MP3 PLAYER

Creative Vision:M NEW



PRICE: \$470
SUPPLIER: Major high street stores
INTERNET: <http://au.creative.com>
ISSUE: April 2006, page 50
COMMENTS: At last Creative comes up with a bona fide iPod killer. It supports most movie, photo and music formats. It plays music for 17 hours and video for four. Looks great too.

SPECIFICATIONS: 30GB hard disk; USB 2 Interface; 2.5in 262,144 colour display; fixed Lithium ion battery; support for MP3, WMA, WMA-DRM audio; MPG, MPEG-2, MPEG-4-SP, WMV, XviD, DivX video; BMP, TIFF, GIF, JPG (up to 4 megapixels) pictures; FM radio; voice recorder; AV out; carry pouch. Dimensions: 62 x 19 x 104mm. Weight 163g

MIMO WIRELESS ROUTER

Belkin Wireless Pre-N



PRICE: \$205
DELIVERY: Free
SUPPLIER: www.digitalcityonline.com.au
INTERNET: www.belkin.com/au
ISSUE: October 2005, page 96
COMMENTS: The Pre-N fended off the competition in our tests with the highest speeds over long range, and it's also well suited to VoIP. The user-friendly installation routine is a welcome addition. Contact navid@digitalcityonline.com.au.

SPECIFICATIONS: MIMO 802.11n; 4 x 10/100 ports; 802.11n QoS; MAC cloning; 64/128-bit WEP; WPA; MAC filtering; DMZ; SPI Firewall; IP filtering.

PREMIUM INKJET

Epson Stylus Photo R800

PRICE: \$542
DELIVERY: \$22
SUPPLIER: www.implex.com.au
INTERNET: www.epson.com.au
ISSUE: September 2004, page 44
COMMENTS: Epson's Hi-Gloss ink is the star of the show, producing supreme-quality photos that show no sign of fading even after months of exposure. The R800 is quick at printing photos too. It's comparatively pricey, but worth it.

SPECIFICATIONS: 5760 x 1440dpi 7-colour inkjet; USB 2; A4 photo in 2 mins, 35 secs; 6 x 4-in photo in 1 min, 37 secs; Max tested speed in draft, 11.6ppm.



'This is a printer for the enthusiastic amateur or pro photographer.'

COLOUR OFFICE LASER

Kyocera FS-C5020N

PRICE: \$1880
DELIVERY: \$22
SUPPLIER: www.implex.com.au
INTERNET: www.kyocera.com.au
ISSUE: April 2005, page 63
COMMENTS: This update to the C5016N, which convincingly won our recent colour lasers group test. Running costs are among the lowest around, and great image quality and expansion options make this an attractive buy.

SPECIFICATIONS: 600 x 600dpi colour laser; 16ppm claimed speed; 400MHz CPU; 128MB RAM; 500-sheet input, 250-sheet output trays; 10/100 Ethernet; USB 2; Parallel; PCL6, PCL5C and PostScript3 emulation.



WORKHORSE OFFICE LASER

HP Laserjet 4350dtn

PRICE: \$3159
DELIVERY: \$22
SUPPLIER: www.implex.com.au
INTERNET: www.hp.com.au
ISSUE: April 2003, page 52
COMMENTS: The 4350dtn reached speeds of 68ppm in our tests - phenomenal for a machine of this size. We were impressed with its print quality in all areas too, and its build quality and networking features are high.

SPECIFICATIONS: 1200 x 1200dpi mono laser; 45ppm claimed speed; 460MHz CPU; 96MB RAM; 500-sheet input, 100-sheet multipurpose tray; duplex; 10/100 Ethernet; USB 2; Parallel; PCL6, PCL5C and PostScript3 emulation.



VALUE INKJET

Canon Pixma IP3000

PRICE: \$165
DELIVERY: \$20
SUPPLIER: www.computeralliance.com.au
INTERNET: www.canon.com.au
COMMENTS: Canon uses all its design skill with the IP3000, as the shape and recessed ports mean you can use it flush against a wall. Print quality is good rather than spectacular, but features such as duplex and CD printing lift the Pixma above its budget brethren.

SPECIFICATIONS: 4800 x 1200dpi 4-colour thermal inkjet; USB 1; A4 photo in 2 mins, 30 secs; 6 x 4-in photo in 1 min, 9 secs; max tested speed in draft, 10ppm.



MULTIFUNCTION PRINTER

Canon Pixma MP780

PRICE: \$435
DELIVERY: \$22
SUPPLIER: www.implex.com.au
INTERNET: www.canon.com.au
ISSUE: May 2005, page 90
COMMENTS: Professional users will appreciate the MP780's automatic document feeder and well-featured fax. Add a great printer and a great scanner, and you have a winning combination.

SPECIFICATIONS: 4800 x 1200dpi 4-colour thermal inkjet; A4 photo in 6 mins; max tested speed in draft, 10.9ppm; 2400 x 4800ppi scanner; 33.6K fax; automatic document feeder; 2-line LCD; USB 2; PictBridge.



ADSL WIRELESS ROUTER

NetComm MyNetGateway NB9W

NEW

PRICE: \$219
DELIVERY: \$15
SUPPLIER: www.pc.net.au
INTERNET: www.netcomm.com.au
ISSUE: April 2006, page 49
COMMENTS: Most 802.11g wireless routers are much of a muchness. But the NB9W sports two phone sockets for VoIP calls and supports ADSL2+ too. It's well worth the premium.

SPECIFICATIONS: 802.11g; ADSL2+ modem; 4 x 10/100 ports; 64/128-bit WEP; WPA; WPA 2; MAC access control; VPN pass through; 2 x RJ-45 phone ports for VoIP. Part code: NB9W.



FLATBED SCANNER

Epson Perfection 3490 Photo

PRICE: \$199
DELIVERY: \$15
SUPPLIER: www.pc.net.au
INTERNET: www.epson.com.au
ISSUE: February 2006
COMMENTS: The image quality would happily grace a scanner costing three times the price, and it's quick: a 150ppi A4 scan took just six seconds, and a 300ppi scan a mere 21 seconds.

SPECIFICATIONS: 3200 x 6400ppi scanner; CCD sensor; 224 x 305mm scan area; USB 2 interface; transparency adaptor; ABBYY Finereader Sprint 6; 275 x 419 x 86mm (WDH)



AMD MOTHERBOARD

Gigabyte GA-K8N Pro-SLI

NEW

PRICE: \$165
DELIVERY: Free
SUPPLIER: www.nintek.com.au
INTERNET: www.giga-byte.com.au
ISSUE: April 2006, page 45
COMMENTS: This motherboard includes everything an enthusiast needs, including two PCI Express 16x slots for SLI, four SATA connectors, and all the great features that come with nVidia's nForce4 SLI chipset.
SPECIFICATIONS: Socket 939; nvidia nForce4 SLI 2 x PCI Express 16x; 2 x PCI; 4 x DIMM Sockets; Max 4GB RAM; 9-channel audio; 4 x SATA; RAID0, 1, 0+1; Gigabit Ethernet. Part code: GA-K8N Pro-SLI.



The A-LIST

INTEL MOTHERBOARD

Abit AL8



PRICE: \$212
DELIVERY: \$10
SUPPLIER: www.megapc.com.au
INTERNET: www.2.abit.com.tw
ISSUE: October 2005, page 51
COMMENTS: The AL8 is a great choice for Pentium D setups - just note it doesn't support the Pentium 4 Extreme Edition or SLI graphics. But the low price, plentiful RAID options and High Definition Audio more than compensate.

SPECIFICATIONS: Socket 775; Intel 945P chipset; ICH7R south bridge; 7.1 audio; 1x PCI-E (16x); 3x PCI-E (1x); 2x PCI; 4x DOR2; Ultra ATA/100; 6x SATA 2; 2x PCI; 4x USB 2; FireWire; 2x Digital S/PDIF out; Gigabit Ethernet.

PERFORMANCE GRAPHICS CARD

Albatron 7800GT



PRICE: \$469
DELIVERY: Free
SUPPLIER: www.nintek.com.au
INTERNET: www.albatron.com.tw
ISSUE: November 2005, page 127
COMMENTS: Despite costing some \$200 less than a 7800 GTX, this 7800 GT card only sacrifices a tiny amount of performance; most importantly, it can still play even the toughest games at 1600 x 1200 resolutions with anti-aliasing switched on.

SPECIFICATIONS: PCI-E; NVIDIA GeForce 7800 GT; 400MHz core; 256MB 500MHz GDDR3 RAM; 256-bit memory interface; 7/20 vertex/pixel pipelines; 2x DVI-I; video in/out.

INTERNAL DVD WRITER

Lite-On SOHW 1693S



PRICE: \$64
DELIVERY: \$12
SUPPLIER: www.secret.com.au
INTERNET: www.liteon.com
ISSUE: December 2005, page 91
COMMENTS: There's no excuse for having a slow, under-specified DVD writer now that you can buy one of the fastest drives on the market (including dual-layer writing) for under \$70 makes this a steal.

SPECIFICATIONS: EIDE DVD Writer; 2MB Buffer; 16x DVD-R; 16x DVD-R; 8x DVD-RW; 6x DVD-RW; 4x DVD-R DL; 4x DVD-R DL; 48x CD-R; 24x CD-RW; CyberLink Power2Go; Nero Express Suite.

MID-RANGE GRAPHICS CARD

Albatron 6800 GS



PRICE: \$329
DELIVERY: \$15
SUPPLIER: www.pc.net.au
INTERNET: www.albatron.com.tw
ISSUE: January 2006, page 49
COMMENTS: If you can't justify spending over \$500 on a graphics card but still want to play the latest games at 1280 x 1024, the 6800 GS chipset is a great choice. The only caveat is you'll have to drop extra effects in games like F.E.A.R. and Call of Duty 2.
SPECIFICATIONS: PCI Express; Nvidia GeForce 6800 GS; 420MHz core clock; 256MB 500MHz GDDR3 RAM; 5 vertex and 12 pipelines; 1x DVI-I; 1x VGA; S-Video.

NAS APPLIANCE

Synology Disk Station 101g+ NEW



PRICE: \$528
DELIVERY: \$11 to \$22
SUPPLIER: www.compucon.com.au
INTERNET: www.synology.com.au
ISSUE: April 2006, page 75
COMMENTS: This quiet-running 160GB unit - just 27.5dBA in our tests - offers everything you could want from a NAS appliance. It can act as a file server, web server, print server and photo server, and is easy to both set up and use, with good performance.
SPECIFICATIONS: 160GB NAS Appliance; Gigabit Ethernet; 3x USB 2 ports; External SATA port; print server; FTP server; Media Server; web server; hidden file support; 1yr RTB warranty; 60 x 182 x 212mm (WDH)

INTERNAL HARD DISK

250GB Maxtor DiamondMax 10



PRICE: \$151
DELIVERY: \$10
SUPPLIER: www.msy.com.au
INTERNET: www.maxtor.com.au
ISSUE: July 2005, page 90
COMMENTS: Nothing else can match the DiamondMax 10 for its mixture of quietness and value for money: the 250GB model works out at just 60 cents per gigabyte. And now it's lead-free too.

SPECIFICATIONS: Model 6L200M0; SATA; 300GB; 7200RPM; 8/16MB buffer; 28.8dBA sound level (measured); 10.13ms average seek time (measured); 600,000 hours MTBF; 2yr RTB warranty.

SOUND CARD

Creative X-Fi XtremeMusic



PRICE: \$139
DELIVERY: Free
SUPPLIER: www.digitalcityonline.com.au
INTERNET: http://au.creative.com
ISSUE: December 2005, page 58
COMMENTS: With onboard audio providing more than enough power for most users the sound card market is declining. But the X-Fi is a welcome update to the Sound Blaster that can deliver perceptibly better audio. Contact navid@digitalcityonline.com.au
SPECIFICATIONS: LineIn/coaxial S/PDIF input; 7.1 line output (on three mini-jacks); PCI 24-bit/96kHz input and output; 109dB signal-to-noise ratio; supports EAX Advanced HD 4, ASIO 2, Dolby Digital EX and DTS ES.

BACKUP SOFTWARE

Acronis True Image 9 NEW



PRICE: \$71
UPGRADE: \$42
SUPPLIER: Acronis via website
INTERNET: www.acronis.com
ISSUE: April 2006, page 86
COMMENTS: True Image is exactly what backup software should be: easy to use, thus encouraging you to set up automatic backups, extremely flexible and competitively priced. With both incremental and differential backups on offer, plus the option of a complete system restore, it's easily your number one choice.

'Shows Norton Ghost how the job should be done.'

WEB DEVELOPMENT SUITE

Macromedia Studio 8

PRICE: \$1344

UPGRADE: \$540

SUPPLIER: www.implex.com.au

INTERNET: www.macromedia.com.au

ISSUE: November 2005, page 92

COMMENTS: Although Dreamweaver 8 isn't

a huge improvement, it's still the best page-

oriented web authoring package available.

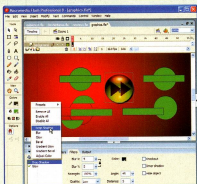
For those wanting to deliver a richer web

experience, Flash Professional 8 sets new

standards. And Studio 8 is the best way to buy

into both, not to mention Fireworks, Contribute

3 and FlashPaper 2.



'Studio 8 is a watershed release.'

INTERNET SECURITY SUITE

ZoneAlarm Internet Security Suite 6



PRICE: \$90

UPGRADE: N/A

SUPPLIER: www.zonelabs.com.au

INTERNET: www.zonelabs.com.au

ISSUE: November 2005, page 69

COMMENTS: A highly effective anti-spyware

tool adds the finishing touch to ZoneAlarm's

many existing strengths: arguably the best

software firewall around, some brilliant privacy

features, a strong anti-virus module and

impressive spam filtering.

ACCOUNTS SOFTWARE

MYOB Accounting Plus v15



PRICE: \$431

UPGRADE: \$245

SUPPLIER: www.implex.com.au

INTERNET: www.myob.com.au

ISSUE: July 2005, page 54

COMMENTS: Not a major upgrade but

some fine tuning helps keep MYOB ahead

of the game. It's highly customisable and

provides everything from invoices, quotes and

payment advices to full accounts control and

reconciliation, GST to BAS preparation and

business banking.

PERSONAL OFFICE SUITE

OpenOffice 2.0



PRICE: Free

UPGRADE: N/A

SUPPLIER: www.openoffice.org

INTERNET: www.openoffice.org

ISSUE: February 2006

COMMENTS: This suite makes it even

easier to shift from Microsoft Office, with

a reassuringly similar menu structure and

excellent file compatibility. With a high quality

word processor, spreadsheet, presentation

software and database thrown in, you can't

argue with its value.

CORPORATE OFFICE SUITE

Microsoft Office 2003 Professional Edition



PRICE: \$685

UPGRADE: \$455

SUPPLIER: www.implex.com.au

INTERNET: www.microsoft.com/australia

ISSUE: January 2004, page 58

COMMENTS: Microsoft Office's corporate-

friendly features (such as ease of roll-out) and

emphasis on XML mean it can't be ignored.

But perhaps its biggest strength is that every

other business now expects you to be using

Microsoft Office.

GRAPHICS/DESIGN SUITE

Adobe CS2 Standard Edition



PRICE: \$1406

UPGRADE: \$552

SUPPLIER: www.advancesoftware.com.au

INTERNET: www.adobe.com.au

ISSUE: February 2004, page 50

COMMENTS: With Photoshop costing over

\$900 alone, it makes sense to buy Creative

Suite 2, which also includes ImageReady,

InDesign and Illustrator. But with powerful

photo-editing tools, superb multilayer

handling and non-destructive transformations,

Photoshop remains the crown jewel.

VIDEO EDITING

Pinnacle Liquid Edition 6



PRICE: \$749

UPGRADE: N/A

SUPPLIER: www.computeralliance.com.au

INTERNET: www.pinnacle.com

ISSUE: March 2005, page 58

COMMENTS: Pinnacle Liquid Edition 6

is a complete editing package, with

comprehensive file support including HDV.

It's great at real-time editing and is capable

of mixing at least three tracks of DV. At

nearly half the price of Premiere Pro 1.5, it's

a powerful, user-friendly app.

PHOTO EDITING

Adobe Photoshop Elements 4



PRICE: \$149

UPGRADE: N/A

SUPPLIER: www.advancesoftware.com.au

INTERNET: www.adobe.com.au

ISSUE: January 2006, page 52

COMMENTS: Elements 4 makes it

ridiculously easy to organise photographs,

including the ability to automatically recognise

faces. You then have the choice to quickly fix

photos or tap into the Photoshop-based power,

including layers. Then output the results to

slide show, WMV file, DVD or the web.

Reviews Roundup

TOP 10 PCs

	MODEL NAME	PRICE	ISSUE	PAGE	SPECIFICATION	VERDICT	SCORE
1	 Scorptec Stinger <small>PC AUTHORITY RECOMMENDS</small>	\$3999	97	48	2.2GHz Athlon 64 X2 4400+; 1GB PC3200 SDRAM; 500GB HDD; GeForce 7800GT; 19in LCD.	Virtually no detail has been ignored in this very well-rounded, powerful system.	*****
2	 TI Power Dual AMD 4000 <small>PC AUTHORITY RECOMMENDS</small>	\$3999	97	47	2.4GHz Athlon 64 X2 4800+; 1GB PC3200 SDRAM; 400GB HDD; GeForce 7800GT; 19in LCD monitor.	A good-value and very powerful system for those seeking ultimate performance.	*****
3	 TI AMD Power 3000 <small>PC AUTHORITY RECOMMENDS</small>	\$3025	100	80	2.2 GHz Athlon 64 X2 4200+; 1GB PC3200 SDRAM; 500GB HDD; GeForce 7800GT; 19in LCD monitor.	Another winner from TI. This feature-packed powerhouse has no weak points.	*****
4	 PC Express Phoenix 1550A <small>PC AUTHORITY RECOMMENDS</small>	\$3800	96	38	2.2GHz Athlon 64 X2 4200+; 1GB 3200DDR RAM; 256MB XpertVision GeForce 7800GT; 500GB HDD; 19in LCD.	A near perfectly balanced performance PC.	*****
5	 Altech Zed Cryo <small>PC AUTHORITY RECOMMENDS</small>	\$6423	95	38	3.2GHz Athlon 64FX-57; 1GB 3200XLR RAM; 2 x 7800GT SLI; 320GB HDD; 19in LCD.	Obscenely fast, although some features could be better. As could the noise.	*****
6	 Dell <small>PC AUTHORITY RECOMMENDS</small>	\$2699	95	44	3GHz Pentium D; 1GB PC2-5300 RAM; 6800 graphics; 160GB HDD; 19in LCD.	A mid-range dual-core system that offers great value for money.	*****
7	 TI Super Dual AMD 2500 <small>PC AUTHORITY RECOMMENDS</small>	\$2499	97	51	2.2GHz Athlon 64 X2 4400+; 1GB PC3200 SDRAM; 400GB HDD; GeForce 6600GT graphics; 19in LCD.	A very tidy system for the money. Only mediocre 3D speed keeps it from climbing higher.	*****
8	 PC Market Athlon64 GDCS <small>PC AUTHORITY RECOMMENDS</small>	\$1499	92	42	1.8GHz Athlon 64 3000+; 1GB PC3200 DDR RAM; 128MB Leadtek GeForce 6600GT; 160GB HDD; 17in LCD.	No obvious weak points make this our budget system of choice.	****
9	 Pioneer DreamVision PC	\$1999	96	96	2.8GHz Pentium4 551; 1GB PC3200 DDR RAM; RADEON X600; 200GB HDD.	It's a portable PC shaped like a barrel, but could do with a punchier feature set.	****
10	 Alienware Aurora 7500	\$7548	100	80	2.4GHz Athlon 64 X2 4800+; 2GB PC3200XLR RAM; 2 x eVGA 7800GTX KO SLI; 320GB HDD; 20in LCD.	Fantastically fast and well built, but it's overpriced and some features are mediocre.	*****

FOCUS ON: Viiv

Viiv is a new label by Intel that describes a platform, rather than any one particular technology or product. Similar to Centrino, which describes a combination of CPU, wireless module and chipset within a notebook, Viiv refers to the combination of hardware in next-generation media centre PCs, including DRM. Viiv-compliant systems and device all promise to work seamlessly with each other. The icing on the cake, however, is that we'll likely see much smaller form factors that will resemble a living room appliance, rather than a desktop PC.

TOP 5 MCEs

		ISSUE	PAGE
1	Inspire AVR-200 \$1699 1.8GHz Athlon 64 3000+; Radeon Xpress 200; 512MB PC3200 RAM; 200GB ✓ RECOMMENDED: The Inspire looks good and sports everything it needs while keeping the price down. *****	98	43
2	Altech Maestro Pro 2 \$2999 Intel Pentium D 820; Intel 945P chipset; 1GB PC2-5200 RAM; NVIDIA GeForce 6600 ✓ LABS WINNER: Top-notch high performance, great design and impressive build quality too. *****	96	92
3	Fujitsu Deskpower TX \$499 3GHz Pentium 4 260; Intel 915G chipset and graphics; 512MB PC4300 RAM; 600GB ✓ RECOMMENDED: Despite some quirks, this is a desirable system that brings both computer illuminati and illiterati into the world of Media Centre. *****	99	38
4	Claritas TeraServer CTS10000 \$5499 2.2GHz AMD Athlon 64 3500+; VIA K8T800P chipset; 1GB PC3200 RAM; GeForce 6600; 1000GB. More features than you'd think you need. But even if money was no object, we'd still have doubts. *****	96	92
5	Total Home Theatre PC 301 \$3200 2GHz AMD Athlon 64 3200+; NVIDIA nForce 4 chipset; 512MB PC3200 RAM; NVIDIA GeForce 6600; 200GB HDD It just tipped the scales in our noise test, but this is a very tempting system. *****	95	40

ARCHIVERS

1	7-Zip	Free	99	62	1.02MB download	Looks aren't everything and 7-Zip is brimming with features, and costs nothing.	*****
2	WinRK	US\$30	99	62	2.6MB download	A good GUI and solid encryption round off an exceptional package.	*****
3	WinRAR 3.5	US\$29	99	62	1.1MB download	One of the fastest compression utilities around and still holds its own when it comes to archive size.	*****
4	WinZip 10 Professional	US\$50	99	62	5.32MB download	What it lacks in compression ratio and value, it makes up for in job automation.	*****
5	SecureZIP	US\$300	99	62	8.35MB download	Industrial grade encryption is overkill for the home, but it's ideal for the business network market.	*****








TOP 5
SMB PCs

		ISSUE	PAGE
1	Dell OptiPlex GX620 USFF \$1436 3GHz Pentium 4 531; 512MB PC2-4200 RAM; Intel 945G Express chipset; 80GB HDD. ✓ RECOMMENDED: The smallest GX620 is the pick of Dell's bunch. Quiet, stylish and perfectly tuned for business. *****	95	56
2	HP dc7600 Slim Desktop \$1270 2.8GHz Pentium 4 521; 512MB PC2-4200 RAM; Intel 945G Express chipset; 80GB HDD. ✓ RECOMMENDED: With a low price, the Ultra Slim is excellent value for money. *****	96	79
3	HP dc7600 Convertible MT \$1270 2.8GHz Pentium 4 521; 512MB PC2-4200 RAM; Intel 945G Express chipset; 80GB HDD. The Minitower demonstrates the versatility of HP's range. *****	95	56
4	Dell OptiPlex GX620 SF \$1499 3GHz Pentium 4 531; 512MB PC2-4300 RAM; Intel 945G Express; 80GB HDD ✓ RECOMMENDED: Quiet, stylish and perfectly tuned for business. *****	95	56
5	HP dx5150 \$1160 2GHz AMD Athlon 64 3200+; 512MB PC3200 RAM; MSI MS-7050 motherboard; 80GB HDD ✓ RECOMMENDED: Quiet, cheap and well supported. *****	100	77

FOCUS ON:
Mobile graphics

Time was when having a notebook meant you had no chance of playing a game, but then gargantuan notebooks started to appear that changed all this. The problem is that graphics chips require an enormous amount of power and generate a great deal of heat. Nowadays, gaming laptops are common but size can still be an issue - just see Pioneer's DreamBook Power 900K in this month's Labs and the face off on page 40.

TOP 10 NOTEBOOKS

		MODEL NAME	PRICE	ISSUE	PAGE	SPECIFICATION	VERDICT	SCORE
1		Dell Latitude D410 PC AUTHORITY RECOMMENDED	\$3270	96	44	2GHz Pentium M 760; 1GB PC2-4200 RAM; 60GB HDD; Intel GMA 900 graphics; 12.1in display.	Top-notch performance, great design and impressive build quality too.	*****
2		Sony VAIO VGN-TX17GP PC AUTHORITY RECOMMENDED	\$3799	97	52	1.2GHz ULV Pentium M 753; 1GB PC3200 RAM; 11.2in widescreen; Intel GMA950 graphics; 60GB HDD.	A notebook showcasing all Sony's usual design skill, squeezing a dual-layer DVD writer into a sleek 1.4KG.	*****
3		Lenovo ThinkPad X41 PC AUTHORITY RECOMMENDED	\$3649	95	40	1.5GHz Pentium M 758 LV; 1GB PC3200 RAM; 60GB HDD; Intel GMA 900 graphics; 12.1in display.	Great build quality, a remarkably low weight and impressive battery life, but expensive.	*****
4		Toshiba Portege R200 PC AUTHORITY RECOMMENDED	\$3220	95	43	1.2GHz Pentium M 753 ULV; 512MB PC2-4200 RAM; 60GB HDD; Intel 915GMS graphics; 12.1in display.	Outstandingly engineered. Less ergonomic but lighter alternative to the X41.	*****
5		Dell Inspiron D610 PC AUTHORITY RECOMMENDED	\$3032	94	38	Intel Pentium M 750 1.9 GHz; 1GB DDR2; 915GM graphics; 40GB HDD.	It's expensive but well worth the money. For business use, you won't go wrong with it.	*****
6		Fujitsu Lifebook P7120 PC AUTHORITY RECOMMENDED	\$2649	100	54	1.2GHz Pentium M 753 ULV; Intel 915GM graphics; 512MB RAM; 10.6in widescreen; 60GB HDD.	What it lacks in power and, to some extent, practicality, it more than makes up for in design and pure gorgeousness.	*****
7		HP Compaq nw8240 PC AUTHORITY RECOMMENDED	\$4639	98	38	2.13GHz Pentium M 770; 1GB RAM; 15.4in widescreen; ATI Mobility FireGL V5000 graphics; 80GB HDD.	Impress your clients, do real work on the move or at your desk, and maybe even watch the occasional widescreen movie. The nw8240 is a professional tool that has it all.	*****
8		Acer Aspire 9504WSMI PC AUTHORITY RECOMMENDED	\$3249	100	56	2GHz Pentium M 760; 1GB RAM; 11.7in widescreen; ATI Mobility X700 graphics; 100GB HDD.	A solidly built laptop with plenty of entertainment features and a bright, clear display. Power and quality that won't break the bank.	*****
9		Compaq Presario V2340AP PC AUTHORITY RECOMMENDED	\$1173	98	38	1.4GHz Celeron M 360; 256MB PC2700 RAM; 14in wide-screen; Intel 915GM graphics; 40GB HDD.	What it lacks in power is made up for in design and sheer value. If you're a light-use user, it's an excellent choice.	*****
10		ITC Metabox 730	\$4250	101	40	2.13GHz Pentium M 770; 2GB PC2-4200 RAM; 100GB HDD; Nvidia Go 7800 GTX graphics; 17in display.	It lacks dual core but still offers blistering speed in both 2D and 3D applications.	*****

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Smartbook FL31

Smartbook 259en

Smartbook 259ei

Reviews Roundup

TOP 10 COMPACT DIGITAL CAMERAS

	MODEL NAME	PRICE	ISSUE	PAGE	SPECIFICATION	VERDICT	SCORE
1	 Canon Digital IXUS 55	\$499	97	64	5MP CCD; USB 2; 640 x 480 at 30fps video mode.	An uninspiring and slightly chunkier update to a phenomenal camera. It's the best compact you can buy.	*****
2	 Canon Digital IXUS 50	\$473	95	63	5MP CCD; 2592 x 1944 max resolution; 640 x 480 30fps movies.	Great image quality, both for stills and video, all wrapped up in a desirable, well-built chassis.	*****
3	 Sony Cyber-Shot DSC-W5	\$599	91	47	5MP CCD; 2.5in LCD; 32MB internal memory; 640 x 480 video mode.	A minor update, but superbly engineered and with great image quality.	*****
4	 Samsung Digimax V700	\$899	91	72	7.1MP CCD; 3072 x 2304 max resolution; 38-114 focal length; USB.	A well-priced digital compact, with all the bells and whistles.	*****
5	 Canon Digital IXUS 700	\$849	91	72	7.1MP CCD; 3072 x 2304 max res; 37-111 focal length; USB.	Small, sexy and fast. You'd be hard pressed to find something as small that performs as well.	*****
6	 HP Photosmart R717	\$499	95	63	6.2MP CCD; 2864 x 2160 max resolution; 320 x 240 30fps movies.	An attractive price makes the R717 a good choice for undemanding photography.	****
7	 Olympus C-70 Zoom	\$899	91	74	7.1MP CCD; 3264 x 2448; 38-190 focal length; USB.	A good performer all-round. This offers great value for money.	****
8	 Casio Exilim Pro EX-P700	\$999	91	73	7.2MP CCD; 3072 x 2304 max res; 33-132 focal length; USB.	A camera with good results. It's not the cheapest around, but it produces good quality images.	****
9	 Konica Minolta DiMAGE A200	\$1399	91	73	8MP CCD; 3264 x 2448; 24-200 focal length; USB.	Well featured but an average performer. There's better value had in compacts, or up the scale to SLR.	****
10	 Sony Cyber-Shot DSC-V3	\$1499	94	43	7.1MP CCD; 3072 x 2304; 34-136 focal length; USB.	A relatively high price tag lowers what is otherwise a good all-rounder.	****

FOCUS ON: Compact DV

A poorly publicised benefit of many compact cameras is the ability to record video. It's possible that the first generation of cameras which did this put everybody off – jerky playback, postage stamp resolutions and being limited to only a few seconds of footage blighted practicality. But modern compacts like Canon's Digital IXUS 55 support 640 x 480 video at up to 30fps and which isn't far off DVD's 720 x 480 native resolution.

TOP 5 17-in LCDs

		ISSUE	PAGE
1	Viewsonic VP730b \$459 2 x DVI; D-SUB; 8ms	98	43
	✓ RECOMMENDED: An excellent monitor that is hard to beat at the price. *****		
2	BenQ FP71V \$451 DVI; D-SUB; 4ms (grey-to-grey); stereo 1W speakers ✓ RECOMMENDED: Not the best technical performer, but great value for bargain buyers. *****	95	47
3	Polyview V372 \$389 8ms; DVI; D-SUB; 2 x 2.5W	94	69
	Dirt cheap but a good display. Questionable build quality stops it getting an award. *****		
4	Samsung SyncMaster 730BF \$420 4ms; DVI; D-SUB Samsung's practical, no-frills monitor isn't quite A-list material, but the 3-year zero-defect warranty is great. *****	99	44
5	ASUS PM17TS \$499 8ms; DVI; D-SUB; 2 x 2.5W	94	65
	Average all rounder, but excellent value for money. *****		

PHOTO EDITING

1	Adobe Photoshop Elements 4	\$145	98	52	Windows XP	Improved image management, enhancement and sharing make a great product even better.	*****
2	Adobe Photoshop CS2	\$1129; \$339 upgrade	92	62	Windows 2000 (SP3) onwards	Photoshop users will benefit from many new features and enhancements.	*****
3	Corel Paint Shop Pro X	\$299; \$169 upgrade	98	54	Windows 2000 (SP4)/XP	Improved usability, new photo-centric features and the bundling of Photo Album provide new focus.	*****
4	Macromedia Fireworks 8	\$406	96	61	Windows 2000/XP	A few tweaks to creative power, workflow and integration don't add up to much.	****
5	Ulead PhotoImpact 11	\$90; \$50 upgrade	98	58	Windows 98 SE onwards	A quirky and powerful alternative to Photoshop Elements 4, but it isn't as easy to use.	****

Reviews Roundup

TOP 10 GRAPHICS CARDS

	MODEL NAME	PRICE	ISSUE	PAGE	SPECIFICATION	VERDICT	SCORE
1	 Albatron 7800GT	\$609	96	127	NVIDIA 7800GT; 400MHz core; 500MHz memory; 256MB GDDR3.	It may not be the fastest, but it's fast enough and, at this price, a steal.	*****
2	 Albatron 6800 GS	\$359	98	49	NVIDIA 6800GT; 425MHz core; 500MHz memory; 256MB GDDR3; Shader Model 3.	If the final price rivals Sapphire's GT0, this Shader Model 3 card, could be the mid-range card of choice.	*****
3	 Sparkle SP-PX70GVH 7800 GT	\$619	96	129	NVIDIA 7800GT; 400MHz core; 500MHz memory; 256MB GDDR3.	It's the same card at the same price as the Albatron. But the software bundle just tips it.	*****
4	 Sapphire X1900 XTX	\$999	101	44	ATI X1900 XTX; 650MHz core; 775MHz memory; 512MB GDDR3; Shader Model 3.	The fastest card around, but only 1600 x 1200 hard-core gamers need apply.	****
5	 Asus Extreme N7800GT 512MB	\$849	99	48	NVIDIA 7800GT 512MB; 550MHz core; 850MHz memory; 512MB GDDR3; Shader Model 3.	Awesome performance, but too expensive if you won't push it to its limits.	****
6	 MSI RX1800 XT-VT2D 512E	\$799	99	47	ATI X1800 XT; 625MHz core; 750MHz memory; 512MB GDDR3; Shader Model 3.	Stunning performance, but overkill for most and very, very expensive.	****
7	 XFX GeForce 7800 GTX	\$729	96	129	NVIDIA 7800GT; 450MHz core; 625MHz memory; 256MB GDDR3.	The best software bundle, top performance and low price make the XFX's card the best 7800 GTX.	*****
8	 Sapphire Radeon X800 GT0 Ultimate	\$289	98	49	ATI X800 GT0; 400MHz core; 480MHz memory; 256MB GDDR3; Shader Model 2.	Offers a staggering amount of rendering power for your money. It's also passively cooled but only supports Shader Model 2.	*****
9	 PowerColor X1800XL	\$609	98	46	ATI X1800 XL; 500MHz core; 500MHz memory; 256MB GDDR3; Shader Model 3.	PowerColor's X1800 XL seriously rivals the best 7800GT cards.	*****
10	 GeCube Radeon X1600 XT	\$285	99	47	ATI X1600 XT; 590MHz core; 690MHz memory; 256MB GDDR3; Shader Model 3.	Some respectable scores, but for now the best bet at this price is still the X800 GT0.	****

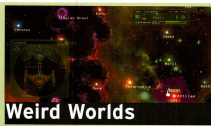
FOCUS ON: HD-DVD

A name you'll be hearing a lot of soon is HD-DVD. In fact, you'll also likely be hearing it in used in the same sentence as Blu-ray because, while not the same technology, they're both vying for your dollars in the coming format wars. HD-DVD is promoted heavily by Toshiba and other big names like NEC, Microsoft and Intel. It doesn't hold as much data as Blu-ray, but it claims to be cheaper to manufacture, resulting in cheaper disc media and players.

TOP 5: BURNERS

		ISSUE	PAGE
1	Lite-On SOHW1693S \$64 16x DVD-R; 16x DVD-R; 8x DVD+RW; 4x DVD-RW; 4x DVD-R9 DL; 4x DVD-R9 DL; 48x CD-R; 24x CD-RW ✓ WINNER Top-class performance at an unbelievable price. *****	97	89
2	Plextor PX-740A \$249 16x DVD-R; 16x DVD-R; 8x DVD+RW; 6x DVD-RW; 8x DVD-R9 DL; 4x DVD-R9; 48x CD-R; 32x CD-RW ✓ RECOMMENDED: A great burner, but you pay for it. *****	97	89
3	LG GSA-4165B \$136 16x DVD-R; 16x DVD-R; 8x DVD+RW; 4x DVD-RW; 4x DVD-R9 DL; 4x DVD-R9; 5x DVD-RAM; 48x CD-R; 32x CD-RW If speed isn't your top priority, the LG has a lot to offer. *****	97	89
4	Asus DRW-1608P \$64 16x DVD-R; 16x DVD-R; 8x DVD+RW; 6x DVD-RW; 6x DVD-R9 DL; 4x DVD-R9; 48x CD-R; 24x CD-RW A good price and fast quoted speeds are let down a little by performance. *****	97	89
5	HP dvd6401 \$97 16x DVD-R; 8x DVD-R; 4x DVD+RW; 4x DVD-RW; 24x DVD-R9 DL; 40x CD-R; 24x CD-RW, LightScribe Best of the internal LightScribe drives. ***	97	89

HOT PICKS: INDEPENDENT GAMES



Weird Worlds

The ultimate coffee break game. Beautiful graphics, addictive gameplay, and a quirky sense of humour make this the perfect time waster.



Mount & Blade

An action/RPG romp that demonstrates what a couple of independent developers can do just by focusing on pure gameplay. Medieval action at its best.



Darwinia

A retro theme dressed up in the latest graphics technology. A superb RTS game for those that remember Tron, Vic-20s and the Datsun 200B.











TOP 5 MFDs

		ISSUE	PAGE
1	Canon Pixma MP780 \$599 4800 x 1200 printer; 9600 x 9600 scanner; 17ppm colour; 25ppm mono; 486 x 472 x 314mm (WDH). ✓ LABS WINNER: Able to perform all functions equally well. This is a true all-rounder. ★★★★★	90	89
2	Samsung SCX-4100 \$399 600 x 600 printer; 600 x 600 scanner; 14ppm mono; 422 x 400 x 239mm (WDH). ✓ RECOMMENDED: An excellent B&W laser unit, with great scanning quality. ★★★★★	90	89
3	Epson Stylus Photo RX630 \$599 5760 x 1440 printer; 2400 x 4800 scanner; 16ppm colour; 17ppm mono; 456 x 256 x 439mm (WDH). Designed to cater for the photo enthusiast, but lacks versatility. ★★★★★	90	89
4	Lexmark X7170 \$499 4800 x 1200 printer; 19,200 x 19,200 scanner; 15/22ppm colour/mono; 490 x 427 x 305mm (WDH). A good unit, overshadowed by its award winning brother, the Lexmark P6250. ★★★★★	90	89
5	HP PhotoSmart 2710 \$699 4800 x 1200 printer; 19,200 x 19,200 scanner; 20ppm colour; 30ppm mono. No digital input and an average display just can't compete. ★★★★★	90	89


FOCUS ON: DLP

Digital Light Processing is used in many consumer projection systems, like home theatre projectors or rear projection TVs. They work by bouncing an image off thousands upon thousands of tiny mirrors which can either reflect the light through a lens (to turn a pixel on), or away from it (to turn it off). In a single DLP projector, the reflected light is then sent through a spinning colour wheel to create the RGB image. DLP projectors are often better at displaying moving images, which make them better suited for home theatre use.

TOP 10 GPS RECEIVERS

	MODEL NAME	PRICE	ISSUE	PAGE	SPECIFICATION	VERDICT	SCORE
1	 Mitac Mio 169 ★★★★★	\$859	98	64	PDA with Windows Mobile 2003; 240 x 320 TFT; MIOMAP software.	It's not perfect but the combination of price, features and software just edged it ahead.	★★★★★
2	 Navman PIN 570 ★★★★★	\$939	98	64	PDA with Windows Mobile 2003; 240 x 320 TFT; SmartST 2005 software.	A razor's edge away from taking the laurels. A price drop could push it ahead in some people's eyes.	★★★★★
3	 TomTom Go 500 ★★★★★	\$1299	98	64	Standalone GPS; Bluetooth; TomTom Navigator 5 software.	Navigator 5 offers plenty of features and a supremely easy-to-use interface.	★★★★★
4	 Travroute CoPilot Live Pocket PC 5 BlueTooth ★★★★★	\$575	98	64	Bluetooth GPS receiver; CoPilot Live 5 software.	The fleet-management option is the killer feature of this package. A great choice if you already own a PDA.	★★★★★
5	 Garmin StreetPilot c320 ★★★★★	\$879	98	64	Standalone GPS; Garmin StreetPilot software.	The price coupled with similar ease-of-navigation makes it very tempting.	★★★★★
6	 HP iPAQ hw6515 Mobile Messenger ★★★★★	\$840	98	64	PDA with Windows Mobile 2003 SE for Phone; 240 x 240 TFT; Quad-band; GPSR phone; Whereis Navigator.	Disappointing when used with Whereis Navigator, but thankfully it's available with TomTom Navigator 5.	★★★★★
7	 Acer n35 ★★★★★	\$787	98	64	PDA with Windows Mobile 2003; 240 x 320 TFT; CoPilot Live 5 software.	Value and the navigation software is up there with the best. But the onboard speaker garbles the instructions.	★★★★★
8	 Garmin eTrex ★★★★★	\$182	98	64	Standalone GPS; mono LCD screen.	No maps included but it lasts ages on two AA batteries - ideal if you're into outdoor pursuits and exercise.	★★★★★
9	 Garmin iQue 3600 ★★★★★	\$849	98	64	PDA with Palm OS 5; 320 x 480 TFT; Que 2.5 software.	We expected great things from one of the most established GPS brands, but the iQue 3600 has outdated software that lacks a 3D view.	★★
	 Navman iCN320 ★★★★★	\$599	98	64	Standalone GPS; SmartST software.	Cheap but far from cheerful. The ICN's dreadful mapping is far removed from its PDA relative.	★★

PRINT MANAGEMENT

1	 FinePrint ★★★★★	US\$50	100	74	2.9MB download	So good it's begging for a printer manufacturer to snap it up.	★★★★★
2	O&K Print Watch ★★★★★	US\$100	100	74	5.5MB download	For managing priorities and budgeting between users, it's hard to fault.	★★★★★
3	InkSaver 2 ★★★★★	US\$35	100	74	4.1MB download	A neat ink reduction tool useful for older, or greedy, printers.	★★★★
4	Business Card Designer Plus ★★★★★	US\$25	100	74	3.1MB download	Design and then print your own business cards.	★★★★
5	Print Inspector ★★★★★	US\$99	100	74	1.7MB download	Less attractive than O&K, but it's a nifty auditing package.	★★★★

Inside: Media PCs

Media PCs need to find a balance between size, performance, and heat. Here's what you'll find inside.

TV TUNER

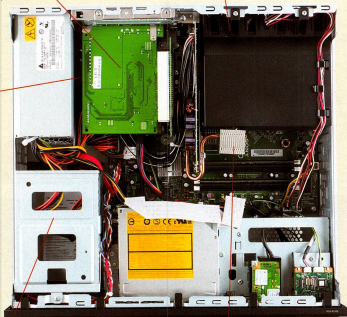
While there are many PCs with TV Tuners, these tend to be rather gimmicky inclusions - how often do people watch TV on their computer? However, the latest version of Windows Media Centre Edition 2005 supports up to four tuners (two of them being High Definition). This means you can watch one channel while recording up to three others. Most MCE PCs in Australia supply two digital tuners (which should support HD).

CHASSIS

The most obvious difference between a regular PC and a Media Centre PC is the chassis. Most people don't want an ugly PC in their living room and so a whole generation of AV-style PC cases have appeared on the market to blend in better with stereos and video equipment.

GRAPHICS

The graphics card in a Media Centre PC needs to be powerful enough to cope with running Media Centre's interface smoothly but not so powerful as to require excessive heat dissipation. As such, popular models are usually NVIDIA's GeForce 6200 and 660 chipsets. Note though that these are unsuitable for playing the latest games.



INTEGRATED COMPONENTS

Hard disks are very important. There's little point in having a great Media Centre with only 40GB of hard disk space - a half-hour programme takes up almost 2GB of space. Typically you'll want to store all of your digital photos, music and videos on your Media Centre so look for storage over 200GB and as near to a terabyte as possible.

HARDWARE, NOISE AND HEAT

In general Media Centre PCs are quite low in specification compared with regular PCs. This is to avoid using power-hungry components which get hot and need cooling - after all, the more heat there is the more fans there need to be to cool everything down. The more fans there are the noisier things get and you don't want a hair dryer-like machine blowing in your living room during a film, do you? However, if you're planning on watching a lot of HD TV, you'll still need a beefy specification to cope with the data throughput.

TOP 5 HDDs: EXTERNAL

		ISSUE	PAGE
1	LaCie 250GB USB 2 \$396 USB 2; 250GB; 7200 RPM ✓ RECOMMENDED: Quiet, compact and with a decent capacity. It offers outstanding value for money. ★★★★★	92	94
2	LaCie D2 Big Disk 500GB \$399 USB 2/FireWire 800; 500GB; 7200 RPM Huge capacity and fast over FireWire 800. A great choice if you have this interface. ★★★★★	92	96
3	Maxtor OneTouch II \$449 USB 2/FireWire; 200GB; 7200 RPM Good performance, good value and quiet too. ★★★★★	92	96
4	Seagate Portable 100GB \$499 USB 2; 100GB; 5400 RPM Expensive for the capacity, but highly portable and virtually silent. ★★★★	92	99
5	Seagate 200GB External \$349 USB 2/FireWire; 200GB; 7200 RPM Relatively expensive per GB and noisy. ★★★	92	99

FOCUS ON: Contrast ratio

The contrast ratio is a measurement of the difference between full white and dark black that a screen or projector can produce. There are two ways of reporting contrast ratios. The first is full on/full off, which measures the brightness of an entirely white image and compares that to a fully dark image. The second is the ANSI method, which displays a grid that alternates black and white squares, and then compares an average of the brightness in each square. The ANSI method is considered an accurate benchmark, to be sure to look for it in the spec sheets of your next projector or LCD screen.

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BCI -6 G/R		\$ 5.00
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HP Rem Inkjet :

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C6578D (#78)	\$ 28.00
C6614D (#20)	\$ 22.00
C6615D (#15)	\$ 22.00
C6625A (#17)	\$ 28.00
C6656A(#56)/C6657A(#57)	\$24/\$32
C8727A(#27)/C8728A(#28)	\$25/\$28



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T038/T039	\$ 8.00/\$10.0
T0321-T0324	\$ 7.50 ea
T0422-T0424	\$ 7.50 ea
T0461-T0474	\$ 7.50 ea
T0491-T0496	\$ 7.50 ea
T0561-T0564	\$ 7.50 ea
T0540-T0549	\$ 7.50 ea
T0621-T0634	\$13.00/B.80
T-5591 - T-5596	\$12.00

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C7115X / Canon-EP-25	\$ 65	Q2613A	\$ 60
Q2624A	\$ 60	FX3	\$ 60



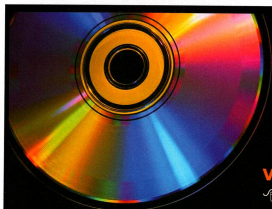
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Front Accessible		3 x 5.25" x 3.5"	
Material		Chassis: 1.0 mm SECC, Front bezel: Aluminum made	
Expansion Slots		7	
Motherboards		ATX, Micro ATX	



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Our Price Original

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(B) Any 5 Black	\$27	\$62
(C) Any 8 Black	\$43	\$100
(D) Any 10 Black	\$54	\$124
(E) Any 2 Colour	\$14	\$55
(F) Any 5 Colour	\$35	\$138
(G) Any 8 Colour	\$54	\$220
(H) Any 10 Colour	\$65	\$276

BC Series

(Printhead Cartridges)

Our Price Original

BC-02	\$29	\$62
BC-03	\$29	\$45
BC-05	\$32	\$63
BC-20	\$29	\$66

BROTHER® compatibles

DEAL 6

LC-02/ LC-04/ LC-21/ LC-47/ LC-800 Series

(Includes Black, Cyan, Magenta, Yellow)

Our Price Original

(A) Any 4	\$36	\$86
(B) Any 8	\$72	\$172
(C) Any 12	\$104	\$258
(D) Any 16	\$136	\$344
(E) Any 20	\$159	\$430

LEXMARK® compatibles

Quality Cartridges

(Cartridges with printhead attached. Includes Black and Colour Cartridges)

Our Price Original

17G0050 (50)	\$35	\$48
17G0060 (60)	\$37	\$57
12A1970 (70)	\$35	\$50
12A1980 (80)	\$37	\$63
10N0016 (16)	\$35	\$46
10N0026 (26)	\$37	\$51

EPSON® compatibles

DEAL 3

T0321, T0422-T0424, T0461-

T0474, T0491-496, T0561-564

(Includes Black, Cyan, Magenta, Yellow, Light-Cyan, Light-Magenta)

Our Price Original

(A) Any 4	\$38	\$72
(B) Any 6	\$57	\$108
(C) Any 8	\$74	\$144
(D) Any 12	\$106	\$216
(E) Any 16	\$139	\$288

DEAL 4

T007/ T008/ T009/ T017/ T018/ T026/

T027/ T028/ T029/ T038/ T039

(Includes Black and Colour cartridges)

Our Price Original

(A) 1 Bk + 1 Colour	\$22	\$95
(B) 2 Bk + 1 Colour	\$32	\$145
(C) 2 Bk + 2 Colour	\$44	\$199
(D) 4 Bk + 3 Colour	\$74	\$304
(E) 6 Black	\$60	\$270
(F) 6 Colour	\$69	\$245

DEAL 5

T013/ T014/ T050/ T051/ T052/ T053/

S020089/ S020093/ S020108/

S020110/ S020187/ S020189/

S020191/ S020193

(Includes Black, Colour cartridges)

Our Price Original

(A) 1 Bk + 1 Colour	\$16	\$77
(B) 2 Bk + 1 Colour	\$22	\$110
(C) 2 Bk + 2 Colour	\$32	\$154
(D) 4 Bk + 3 Colour	\$56	\$238
(E) 6 Blacks	\$34	\$183
(F) 6 Colours	\$59	\$292

Ultra-New Cartridges

(Includes Black, Cyan, Magenta, Yellow)

T0621, T0631-T0634

Our Price Original

T0621 (high vol. Bk)	\$13.00	\$17
T0631 (stand. Bk)	\$10.50	\$13
T0632 (cyan)	\$10.50	\$13
T0633 (magenta)	\$10.50	\$13
T0634 (yellow)	\$10.50	\$13

HP® compatibles

Quality Cartridges

(Cartridges with printhead for excellent print. Includes Black and Colour Cartridges)

Cartridge Model Our Price Original

C6615D (15)	\$26	\$55
C6625D (17)	\$34	\$68
C6614D (20)	\$30	\$60
C1823D (23)	\$34	\$66
C1825A (25)	\$30	\$60
C1826A (26)	\$30	\$60
C8727A (27)	\$26	\$55
C8728A (28)	\$29	\$58
C1829A (29)	\$30	\$60
C1845A (45)	\$26	\$55
C1849A (49)	\$32	\$64
C6656A (56)	\$26	\$55
C6657A (57)	\$35	\$66
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Pulsar 590A Bluetooth Headset with Universal Adapter

- Wireless high fidelity stereo sound.
- Foldable design for easy storage.
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- Up to 12 hours talk time and up to 10 hours audio listening time.
- Universal adapter plugs directly into most 3.5 mm audio devices, such as iPods, to enjoy wireless stereo listening.
- Enables seamless switching between calls and music.



PT-L510SL

Voyager 510SL Bluetooth Headset System with Handset Lifter

- Lightweight design for all-day wearing comfort.
- Multipoint Technology allows seamless switching between your office phone and your voice-enabled Bluetooth mobile phone, PDA or laptop.
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PT-DSP200

DSP 200 USB Headset

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EPILOG

This tanker's for turning

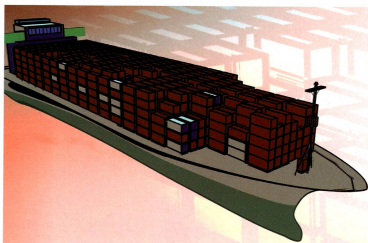
A new kid has climbed aboard the Good Ship Microsoft, and the ripples of change are already starting to show.

Jon Honeyball climbs the mast.

The supertanker has started to turn. You'd need the finest protractor to measure the change in direction so far, but trust me it's happening. It will be a year before we really know what's happened.

The Microsoft supertanker has realised it's heading in the wrong direction – not 'going north instead of south' sort of wrong direction. It's not suddenly going to open source Excel, nor will it pop SQL Server Reporting Services CDs into your favourite breakfast cereal. This is the Good Ship Microsoft, after all. Some say she has pirate flags, although I prefer the mental image of a mighty ship with thousands of people below, with their hands on the large rowing oars. Everyone in Microsoft pulls in the same direction, although history shows this to be more desire than result.

But it's not Cap'n Bill with his hands on the wheel. No, he's up the main mast, sitting in the crow's nest armed with some binoculars. It's not Seaman Steve of Ballmer either; he's down below cheering on the teams of rowers. It's a new face, one picked up at the last island stopover. It's Shipman Ozzie, fresh from the intake of new blood from Port Groove.



capabilities it helped generate. Microsoft has been at the forefront of the Web Services, XML and SOAP world and its latest development tools are the best of the breed. But fleet-footed startups, from Google's billionaires to the two-man teams toiling over podcasting and RSS tools, have shown

With the announcement of Ozzie's new position, it's clear Microsoft is waking up to the need for a new, common vision. Ozzie puts it clearly in his internal memo: 'limited trial use, ad-monetised or free reduced-function use, subscription-based use, online activation, digital license management, automatic update, and other such concepts are now entering the vocabulary of any developer building products that wish to successfully utilise the Web as a channel. Products must now embrace a "discover, learn, try, buy, recommend" cycle – sometimes with one of those phases being free, another ad-supported, and yet another being subscription-based.'

This is the foundation for the next generation, the coming 10 years. Rivals like Google are showing they can deliver fascinating new twists to the established solutions like online email, mapping and indexing, fuelled by untraditional models of advertising and sheer chutzpah. Suddenly, Microsoft has felt the cold wind of being in second place, losing mindshare and importance. This is way bigger than Windows versus Linux. It's the start of the next wave of computing. Microsoft has turned the rudder, and propelled itself in another direction. The bow-wave from this supertanker will be something to behold.

'Suddenly, Microsoft has felt the cold wind of being in second place, losing mindshare and importance.'

Ozzie is now in. It's his new company-wide services vision, which will be driven hard into every operating unit within Microsoft over the next few weeks. Why has this happened? Well, Microsoft has made this sort of sea change before. Bill orchestrated it back in 1995 when he woke up to the uncontrolled and rapid rise of the Internet. Suddenly, the company was looking in the wrong direction, was complacent and needed a shake-up. Bill gave it that shake and dictated that the top people got onboard or left the company.

Today, it's another shake-up. But Microsoft is too big, too all-encompassing, too far-reaching for Bill to do it all by himself. He needs a team with a new figurehead to lead the charge. And Ozzie is the man who's landed the task. Ozzie's vision is simple: Microsoft is being sidelined by the very

that Microsoft is lumbering too slowly. It lacks vision in the services space, and it needs someone to take the company by the scruff of the neck.

Don't get me wrong: Microsoft is an amazing place to visit, to work at and to play with. It never ceases to amaze me how nice, focused and pleasant their employees are. It's like a modern utopia of neat chinos and tie-less shirts. But such a big ship gets complacent, and the fault lies at the very top. Microsoft's internal structure is one of multiple villages, almost fiefdoms, that work hard but independently. They till their soil, plant their seeds and watch their food grow. Each fiefdom has a small collective of leaders, but there's almost no-one in the company who actually spans the entire space. It's left to the genius of Bill and the sheer force of will of Steve to keep the peace.

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